Transport Canada Transports Canada

TP 8294

Marine Casualty Investigations

Enquêtes sur les accidents maritimes

Canada

- E R R A T A -

91-06789/

Le présent "Errata" fait référence au rapport d'enquête concernant les blessures à un membre d'équipage du "BOWEN QUEEN" le 5 août 1989 alors qu'il était amarré au quai Fulford (C.-B.) dont le résumé a paru dans le recueil de résumés des rapports d'investigation sur les sinistres maritimes des navires de commerce (Publication N°11). L'énoncé du deuxième paragraphe de la section "Autres constatations" peut laisser croire que le navire ne satisfaisait pas aux normes applicables. La constatation devrait plutôt se lire comme suit.

"Bien que le navire se conformait aux normes et règlements édictés par les gouvernements fédéral et provinciaux en matière de premiers soins, la capacité d'administrer les premiers soins à bord du navire a été insuffisante pour traiter efficacement les graves blessures du second."

Referring to the Investigation Report concerning the injury to a crew member of the "BOWEN QUEEN" in Fulford Harbour, B.C., on August 5, 1989, an account of this report was included in our Summary Edition, Issue No. 11. The wording in Other finding No 2 may give rise to the perception that the vessel was in someway deficient in meeting applicable standards and the finding should be changed to the following:

"Although the vessel fully complied with Federal Standards and Provincial Industrial First-Aid Regulations, her first-aid capabilities were inadequate to give effective and immediate emergency treatment to the serious injuries suffered by the chief officer."

Also, in the English text of the "BOWEN QUEEN" summary report, in the 2nd paragraph, 5th line, the word "driving" should read "directed".

Please amend your copy accordingly.

Transportation Safety Board of Canada
Investigations - Marine
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Cette publication est aussi disponible en français

COMMERCIAL VESSELS

Summaries of Reports of Investigations
into Marine Casualties and Accidents
Aboard Ships

Issue No. 12 May 1991

Summaries of Commercial Vessel Marine Casualties and Accidents

This publication summarizes the Reports of Investigation into marine casualties and/or marine accidents involving commercial vessels which were investigated by the Marine Casualty Investigations Division of Transport Canada and is published three times a year. There is another publication covering fishing vessels.

Note:

1. A glossary of terms and abbreviations used can be found at the end of this publication.

2. In this publication, unless stated otherwise:

   - all times mentioned are local times;
   - all Regulations referred to are made pursuant to the Canada Shipping Act, and
   - all vessels referred to are Canadian.

The full report of the summaries contained herein may be obtained by writing to:

Director
Canadian Transportation Accident
Investigation and Safety Board
Investigations - Marine
P.O. Box 9120
Alta Vista Terminal
OTTAWA, ONTARIO
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Readers are reminded that this publication and the Reports of Investigation issued by the Marine Casualty Investigations Division are released for accident prevention purposes only and are confined to cause-related circumstances.

Their contents may be deficient and misleading if used in any other process and are not to be used or admitted in evidence in any legal proceedings, either civil or criminal, arising out of any casualty described therein. The statements, opinions and findings in the reports and summaries are those of the Marine Casualty Investigations Division only and do not constitute admissions made by or on behalf of Her Majesty the Queen in right of Canada.

Effective March 29, 1990, the mandate to conduct investigations into Marine occurrences was transferred to the Canadian Transportation Accident Investigation and Safety Board (CTAISB) - Investigations Marine. In accordance with the Act establishing this new organization, outstanding investigations conducted under the Canada Shipping Act prior to this date are being completed and distributed by CTAISB - Investigations Marine.

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"ARCTIC"

A PUBLICITY PHOTOGRAPH

PHOTOGRAPHIE PUBLICITAIRE

"ARCTIC"

Death of a crew member, Mississippi River, U.S.A., December 7, 1989.

Summary

The "ARCTIC" is a 20,117 gross ton OBO with her navigating bridge, machinery space and accommodation located aft and the vessel has special features associated with her designed field of operation in the high Arctic. She is double-skinned in way of her machinery and cargo compartments, this comprising ballast tanks outboard of her seven holds. She can carry crude oil and oil products in holds 2 to 6 and is fitted with Crude Oil Washing and Inert Gas systems.

In late 1989 the "ARCTIC" was scheduled to make a delivery of zinc concentrates to Darrow, Louisiana and to this end she sailed on November 8 from Antwerp, Belgium, with a parcel of 5,500 t in No. 4 hold. The intention was that the "ARCTIC" would endeavour to supplement this tonnage while en route to Darrow by calling at Nanisivik, Baffin Island to load more cargo. However, after reaching a position close to 75°N, 75°W, ice conditions forced the "ARCTIC" to abort the attempt and she resumed her passage to Darrow.

On the forenoon of December 7, the weather was mainly overcast with occasional rain showers and the air temperature was about 20°C with light variable winds as the "ARCTIC" was upbound in the Mississippi River towards Darrow, some 80 miles above New Orleans. With the vessel approaching New Orleans and while preparing other holds for the next cargo, one of the seamen inadvertently opened the access hatch to No. 4 hold and, on noting what appeared to be water in the hold, reported this to the bosun. The bosun, in turn, advised the bridge by telephone of the situation and was requested to report back with his findings. The bosun went down into the hold to investigate but, within a short time, he collapsed, falling onto the cargo. The seaman, who was standing-by at the access hatch, raised the alarm and the junior master, who effectively took charge of rescue efforts, and other crew members hurried to the scene. After two entries into the hold by crew members wearing breathing apparatus the main hatch was opened and the bosun was lifted up on deck from where he was airlifted ashore by a US Coast Guard helicopter. Despite his fellow crew members best efforts to resuscitate him and the administrations of the Coast Guard helicopter paramedic, the bosun was pronounced dead shortly after he had been taken to a nearby hospital in New Orleans.

The Marine Investigations section of the Transportation Safety Board obtained two samples of zinc concentrate and submitted them to a government laboratory for testing. The laboratory report on the tests indicated that, 'due to surface oxidation, the samples consumed oxygen and generated CO2 (carbon dioxide) at a relatively

fast rate. The influence of water on the rates of oxygen depletion and CO2 evolution was significant... the presence of about 3-5% water greatly increased the rate of CO2 evolution and the rate of oxygen depletion...' The moisture content of the parcel on the "ARCTIC" was certified to be 5.71% when loaded at Antwerp. The laboratory results further indicated that in the test '... CO2 concentration in the atmosphere ... within one or two days of storage ... was within the range of hazardous levels'. Carbon dioxide is an odourless, colourless, noncombustible, heavier-than-air gas which does not diffuse or mix readily with air. Intoxication from CO2 causes excitement, headache, drowsiness, weakness and dizziness.

Findings

On December 7, 1989, with the vessel upbound in the Mississippi River to the port of Darrow in Louisiana, U.S.A., the bosun of the Canadian OBO "ARCTIC" died when he entered a closed cargo hold without the necessary precautions having been taken to ensure that the atmosphere in the compartment was safe for the entry of personnel.

It would appear that the following factors led to the accident:

- the hold, containing a parcel of zinc concentrates, had been closed without ventilation for approximately one month;
- oxidation which naturally occurred in the concentrates and the rusting of the hold steelwork resulted in the oxygen level in the compartment being below that required to support respiration, and
- there was not the necessary appreciation on the vessel of the need to ensure that the atmosphere in compartments containing zinc concentrates was safe before the entry of personnel.

Other Findings

There was a lack of adequate information from the shipper on the hazards associated with the carriage of zinc concentrates despite the recommendation in the Code of Safe Practice for Sold Bulk Cargoes that this be provided.

"ARCTIC"
A REPRESENTATION OF VESSELS TRACK DURING VOYAGE
REPRÉSENTATION DU SILLAGE DU NAVIRE PENDANT LE TRAJET
CANADA
UNITED STATES
GREENLAND
ICELAND
BRITISH ISLES
IRELAND
FRANCE
SPAIN
NEWFOUNDLAND
Hudson Bay
BAFFIN BAY
GREENLAND SEA
ATLANTIC
Gulf of Mexico
WEST INDIES
Bahama Islands
Bermudas
Azores
Madeira
Canary Is
Tropic of Cancer
Reykjavik
Montreal
Quebec
Toronto
Boston
New York
Philadelphia
Washington
Chicago
Cleveland
Detroit
Halifax
St John's
Sydney
Winnipeg
Churchill
York Factory
Moose Factory
Port Burwell
C Chidley
Cape Farewell
Hopedale
Indian Harbour
Domino
Battle Harbour
Belle Isle Str.
Conseau Bay
Port Alfred
Anticosti I.
Chateau B
Saint John
C. Breton I.
Sable I.
Portland
Hampton Roads
Wilmington (N.C.)
Charleston
Savannah
Jacksonville
Atlanta
Memphis
Mobile
New Orleans
Houston
Galveston
Brownsville
Dallas
Tampico
Progreso
Veracruz
Havana
Hispaniola
Puerto Rico
Virgin Is
Leeward Is
Jamaica
Kingston
Haiti
Belize
Acapulco
Devon I.
Prince of Wales I.
Somerset I.
Bylot I.
Foxe Basin
Southampton I.
Gulf of Boothia
Hudson Strait
Upernivik
Umanak
Egedesminde
Christianshaab
Holsteinsborg
Godthaab
Faeringehavn
Frederikshaab
Igaliku
Julianehaab
Angmagssalik
Ungava B
Labrador
Davis Strait
Denmark Strait
Ikkattoqsen
Ivigtut
Isafjord
Siglufjord
Akureyri
Seydisfjord
Keflavik
Vestmann Is.
Faroes
Shetland Is.
Hebrides
Bear I.
Jan Mayen I.
Scoresby Sd.
Arctic Circle
North Cape
Hammerfest
Tromso
Lofoten Is.
Narvik
Trondheim
Kristiansund N.
Bergen
Oslo
Stavanger
Kristiansand S.
Lulea
Oulu
Sikea
Hernosand
Vaasa
Repusaari
Turku
Helsinki
Stockholm
Gefle
Gothenburg
Norrkoping
Malmo
Copenhagen
Esbjerg
Hull
Liverpool
Belfast
Dublin
Cobh
Cardiff
Fastnet
Bishop Rock
London
Amsterdam
Rotterdam
Antwerp
Hamburg
Bremen
Berlin
Lubeck
Gdansk
Szczecin
Warsaw
Prague
Leningrad
Riga
U.S.S.R.
POLAND
Cherbourg
Brest
Ushant
Le Havre
Dunkirk
Paris
Nantes
Lorient
Berne
Vienna
Budapest
Bordeaux
Le Pallice
Marseilles
Bayonne
Venice
Genoa
Trieste
Rijeka
Bucharest
Danube
Ferrol
Santander
Bilbao
Vigo
Oporto
Madrid
Barcelona
Rome
Taranto
Ancona
Naples
Brindisi
Valencia
Palermo
Corfu
Piraeus
Athens
Lisbon
Sagres
Cadiz
Gibraltar
Algiers
Tunis
Annaba
Bon
Malta
Crete
Ceuta
Rabat
Casablanca
Fes
Oran
ALGERIA
Safi
MOROCCO
Essaouira
Sfax
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Lerwick
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Belle Isle
Labrador
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Sweden
Finland
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France
Italy
Yugoslavia
Rumania
Hungary
Austria
Poland
Germany
Ireland
Great Britain
Portugal
Morocco
Algeria
Tunisia
Libya
Mediterranean Sea
North Sea
Baltic Sea
Black Sea
Danube
Rhine
Elbe
Seine
Loire
Rhone
Po
Tagus
Ebro
Guadalquivir
Nile
Mississippi
Missouri
Ohio
Colorado
Rio Grande
Amazon
Orinoco
Parana
Magdalena
Panama Canal
Gulf of Mexico
Caribbean Sea
Hudson Bay
Foxe Basin
Gulf of Boothia
Hudson Strait
Davis Strait
Denmark Strait
Baffin Bay
Greenland Sea
Barents Sea
White Sea
Kara Sea
Laptev Sea
East Siberian Sea
Chukchi Sea
Beaufort Sea
Bering Sea
Sea of Okhotsk
Sea of Japan
Yellow Sea
East China Sea
South China Sea
Philippine Sea
Java Sea
Timor Sea
Arafura Sea
Coral Sea
Tasman Sea
Great Australian Bight
Indian Ocean
Arabian Sea
Bay of Bengal
Andaman Sea
Gulf of Aden
Red Sea
Persian Gulf
Gulf of Oman
Mediterranean Sea
Black Sea
Caspian Sea
Aral Sea
Lake Baikal
Lake Ladoga
Lake Onega
Lake Victoria
Lake Tanganyika
Lake Nyasa
Lake Rudolf
Lake Chad
Lake Eyre
Lake Torrens
Lake Frome
Lake Gairdner
Lake Amadeus
Lake Mackay
Lake Disappointment
Lake Nash
Lake Woods
Lake Winnipeg
Lake Manitoba
Lake Winnipegosis
Lake Athabasca
Great Slave Lake
Great Bear Lake
Lake Superior
Lake Michigan
Lake Huron
Lake Erie
Lake Ontario
Lake Nipigon
Lake Abitibi
Lake Timiskaming
Lake Nipissing
Lake Simcoe
Lake Champlain
Lake George
Lake Placid
Lake Winnipesaukee
Lake Memphremagog
Lake Okeechobee
Lake Pontchartrain
Lake Maracaibo
Lake Titicaca
Lake Poopo
Lake Nicaragua
Lake Managua
Lake Izabal
Lake Atitlan
Lake Patzcuaro
Lake Chapala
Lake Texcoco
Lake Xochimilco
Lake Pontchartrain
Lake Maracaibo
Lake Titicaca
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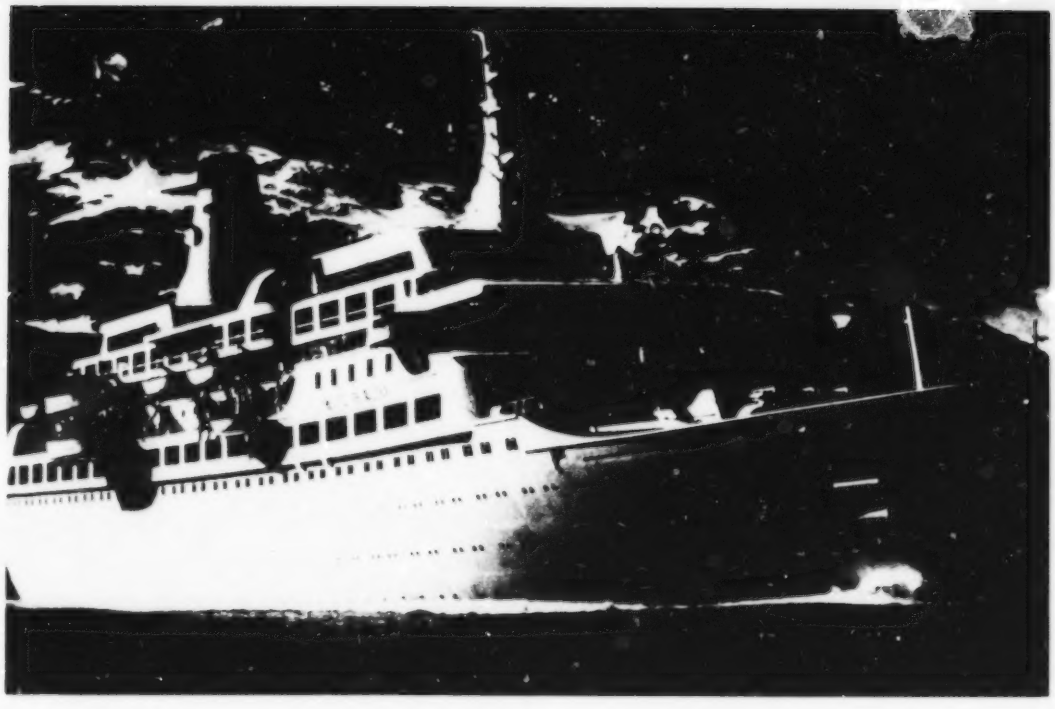
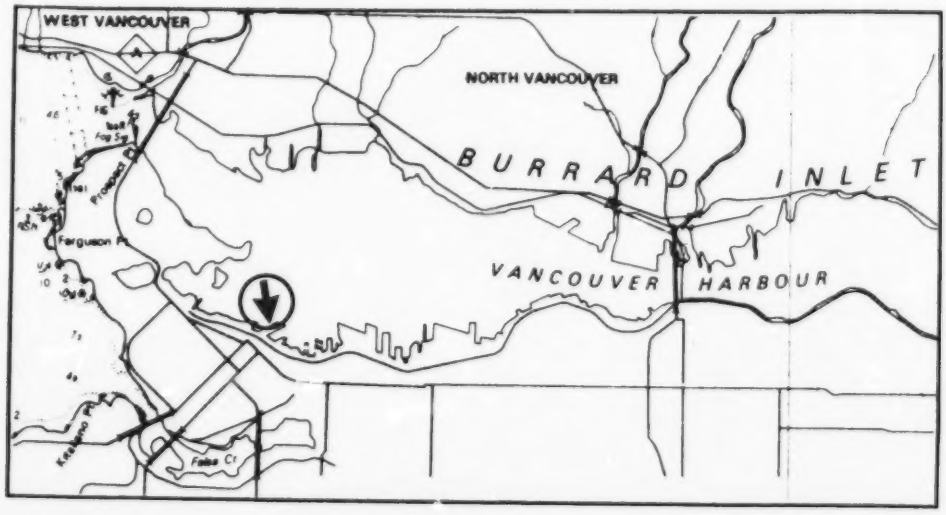
Lake Patzcuaro
Lake Chapala
Lake Texcoco
Lake Xochimilco



"PACIFIC PRINCESS"



"PACIFIC PRINCESS" berthed at Canada Place Terminal.
"PACIFIC PRINCESS" amarré au Canada Place Terminal.

"PACIFIC PRINCESS"

Death of shoreworker, Vancouver, B.C., August 12, 1989.

Summary

The "PACIFIC PRINCESS" is a 20,636 gross ton, passenger liner which was operating on cruises between Vancouver, B.C., and Ketchikan, Alaska. She was built in 1970 and is registered in London, England.

On August 12, 1989, the "PACIFIC PRINCESS" was alongside the Canada Place passenger terminal between cruises and, in the time she was disembarking/embarking passengers prior to the commencement of the next voyage, a local contractor had been employed to clean carpets on board the vessel. The firm had been engaged to work on board a number of cruise ships while they were alongside in Vancouver harbour and on this occasion one of the carpets being cleaned on the "PACIFIC PRINCESS" was that in the lounge/theatre area on deck No. 6. Two employees were allocated to that location and their equipment, which was the property of the contractor, consisted of a water pressure pump (115 volts AC), which was believed to have been used connected to a step-down transformer (240/120 volts), and a vacuum/extraction unit (100 volts) mounted on a 77 L capacity, dirty water collection drum.

The work proceeded without incident until shortly after the lunch break, when, at about 1310, one of the workers returned to the work site after a short absence and found his colleague lying on the floor unconscious, wet from the contents of the collection drum for the vacuum unit, which was found tipped over, close by. While the co-worker attempted to revive the victim, another of the contractor's employees hurried to raise the alarm and seek assistance.

The ship's duty officer was contacted by telephone and as he proceeded to the scene he heard the ship's doctor being called over the public address system. The duty officer contacted the company agent by telephone to obtain the agent's help in calling an ambulance but although the ship's medical staff applied emergency medical procedures the victim did not respond to treatment and he was pronounced dead at 1414. The autopsy revealed the victim to have been a healthy person and that his death had been brought on by electrocution. Tests for drugs and alcohol were negative.

Examination of the carpet cleaning equipment revealed a ground fault in the vacuum unit where wires had been pinched between the motor housing and the top casing of the unit. The transformer unit had unprotected wire connections inside the unit where insulated caps had fallen off and there was a defective electrical outlet on the side of the housing. It was also found that the ground pins had been removed from the plugs on the vacuum and pump units and

from the electrical extension cable plugs.

Findings

On August 12, 1989, while the cruise ship "PACIFIC PRINCESS" was alongside in Vancouver Harbour, British Columbia, a shoreworker received an electric shock from his company's carpet cleaning equipment which he was using on board the vessel. The shoreworker, Mr. Klimovich, died shortly thereafter due to heart failure as a result of inhalation of vomitus brought on by electrocution.

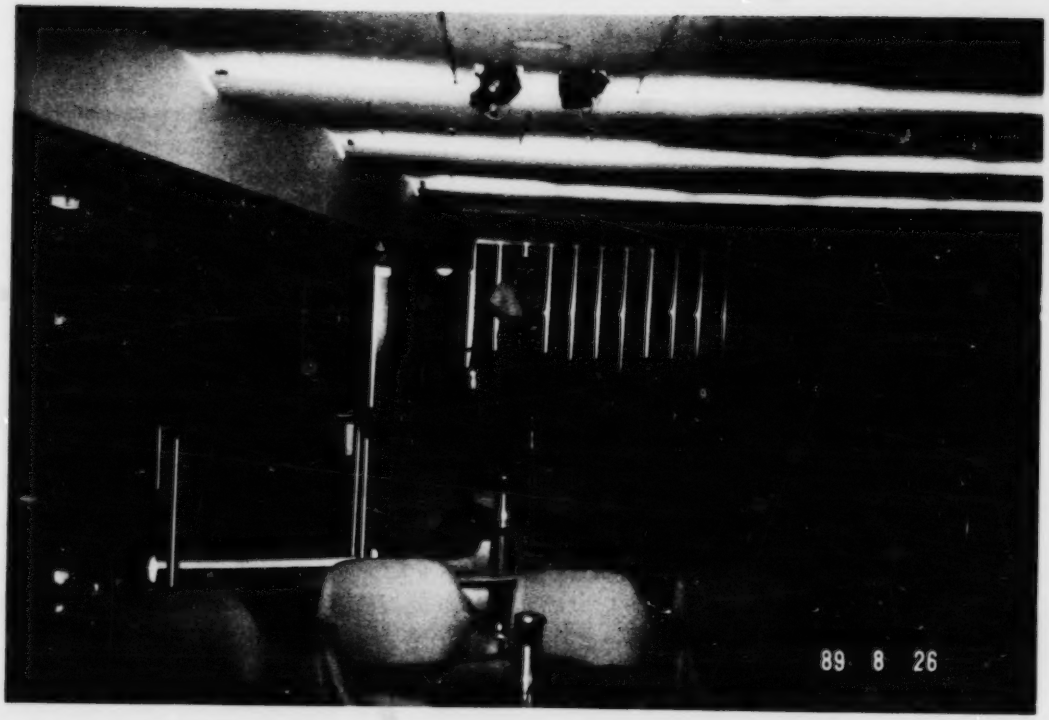
It is considered that the following factors contributed to the accident:

- a vacuum/extraction carpet cleaning apparatus had been improperly reassembled prior to the accident;
- the improper assembly gave rise to an electrical ground fault in the apparatus;
- the ground-pins (safeguards) had been removed from the plugs of the electrical power supply cables on and to the apparatus, and
- the existence of humid conditions, including the damp carpet.

Other Findings

Examination of the electrical systems aboard the "PACIFIC PRINCESS" revealed an ungrounded duplex outlet receptacle in an area adjacent to where the accident occurred. In the event, and although a hazard, use of this particular outlet would not have affected the outcome because the ground-pins had been removed from the carpet cleaning equipment.

It was also observed, from onboard indicating devices, that low electrical insulation resistance readings existed on the vessel's 220 and 440 volts circuits. It is not considered likely that these deficiencies contributed to the accident. They were referred to the vessel's owner and to the Administration of the vessel's registry. These deficiencies were rectified in September, 1989.



Above: View of theatre/lounge area.

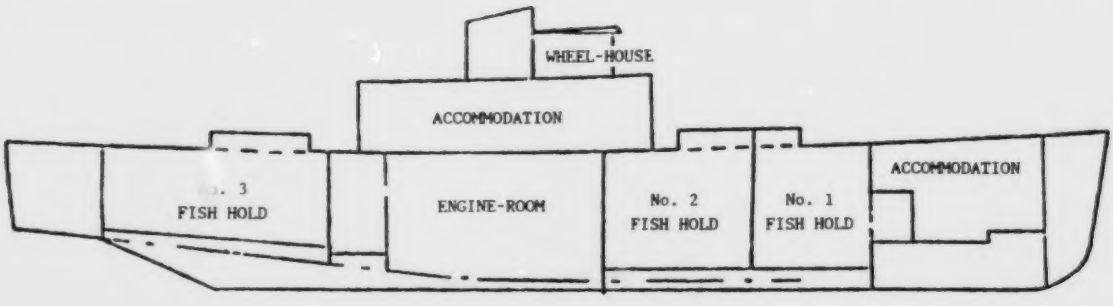
En haut: Vue du théatre et du salon.

"PACIFIC PRINCESS"

Right: Showing vacuum unit mounted on water collection drum.

À droite: Un aspirateur muni d'un resérvoir pour les caux usées.

"OCEAN NAVIGATOR"



"QUATSINO"

"QUATSINO"/"OCEAN NAVIGATOR"

Collision, sinking of "QUATSINO", Discovery Passage, B.C. August 14, 1989.

Summary

The "QUATSINO" was a wooden vessel of 134 gross tons built in 1943 for the US Navy as a submarine chaser. She had been converted for service as a fish packer with two insulated holds forward and one aft. In the early morning hours of August 14, 1989, the "QUATSINO" was northbound in Discovery Passage, towing the 87 gross ton fish processing barge "WESTERN TRANSFER VI" on a 36 m towline. She was bound for a salmon fishing 'opening' and had filled her No. 2 hold with sea water which was being chilled preparatory to taking on fish.

Southbound in Discovery Passage at this time was the 75 gross ton, US-registered, steel tug "OCEAN NAVIGATOR" bound from Alaska to Seattle, Washington. She was making about 8.5 knots over the ground as she towed the loaded freight barge "WESTERN PROVIDER" about 235 m astern and was favouring the eastern side of the passage after passing some fishing vessels in the area of Cinque Islands. The "QUATSINO" was reportedly in the centre of the channel as she passed Separation Head, steering on Bodega Point, after clearing Seymour Narrows and proceeding at approximately 7 to 8 knots over the ground.

There were fog patches and both vessels were using their radars but the "QUATSINO" knew an echo off Granite Point to be the "OCEAN NAVIGATOR" having heard her VHF exchanges with Vancouver VTS. However, although required to, the "QUATSINO" was not participating in the VTS reporting system and the "OCEAN NAVIGATOR" had to make a "blind" VHF call to have the "QUATSINO" identify herself. At this time, with the vessels less than a mile apart, they agreed to a "green-to-green" passing. As the vessels closed, the "OCEAN NAVIGATOR" warned the "QUATSINO" to keep clear of her barge but moments later, at 0045, the "QUATSINO" ran over the towline between the "OCEAN NAVIGATOR" and the "WESTERN PROVIDER" and the port bow of the barge struck the port quarter of the "QUATSINO". The vessels stopped and towlines were cleared and, after a cursory examination did not reveal any underwater damage to the "QUATSINO", the "OCEAN NAVIGATOR" and her tow, which were undamaged, resumed their voyage. With bulwarks stove in and her pumps operating on after spaces as a precaution, the "QUATSINO" was taken in tow by another of the owner's vessels, the "WESTERN EXPRESS". Shortly after getting underway, the "QUATSINO" was noticeably becoming deeper in the water and listing heavily and the six crew members abandoned ship by stepping onto the barge "WESTERN TRANSFER VI" from where they were taken on board a fishing vessel. The "QUATSINO" sank within minutes. There were no injuries nor was there any appreciable pollution. The "QUATSINO" was valued at $350,000.

Findings

On the early morning of August 14, 1989 the American freight barge "WESTERN PROVIDER" under tow of the tug "OCEAN NAVIGATOR" was in collision with the Canadian fishing vessel "QUATSINO" towing the small fish processing barge "WESTERN TRANSFER VI" in the sheltered waters of Discovery Passage, B.C. Visibility was reported to be ¼ mile in fog patches. The "QUATSINO" was damaged on her port quarter and sank approximately one hour after the collision; the "WESTERN PROVIDER" sustained no damage.

In light of conflicting testimony it is not known if the vessels were in a passing situation or a head-on situation when first detecting one another and therefore it would appear that the following factors contributed to the collision:

- neither vessel took positive actions in ample time as necessary to avoid a collision as required by Rules 8 and 17;
- the "QUATSINO" did not take avoiding action after agreeing to a starboard to starboard passing;
- the "QUATSINO" did not participate in the Vancouver VTS reporting system as required, and
- the "QUATSINO" did not attempt to communicate with the "OCEAN NAVIGATOR" until he was called on VHF radiotelephone.

Other findings

Passing arrangements on VHF radiotelephone were not made until approximately 1¼ minutes prior to the collision.

The "OCEAN NAVIGATOR" was on the port side of the passage due to the fishing vessels encountered earlier.

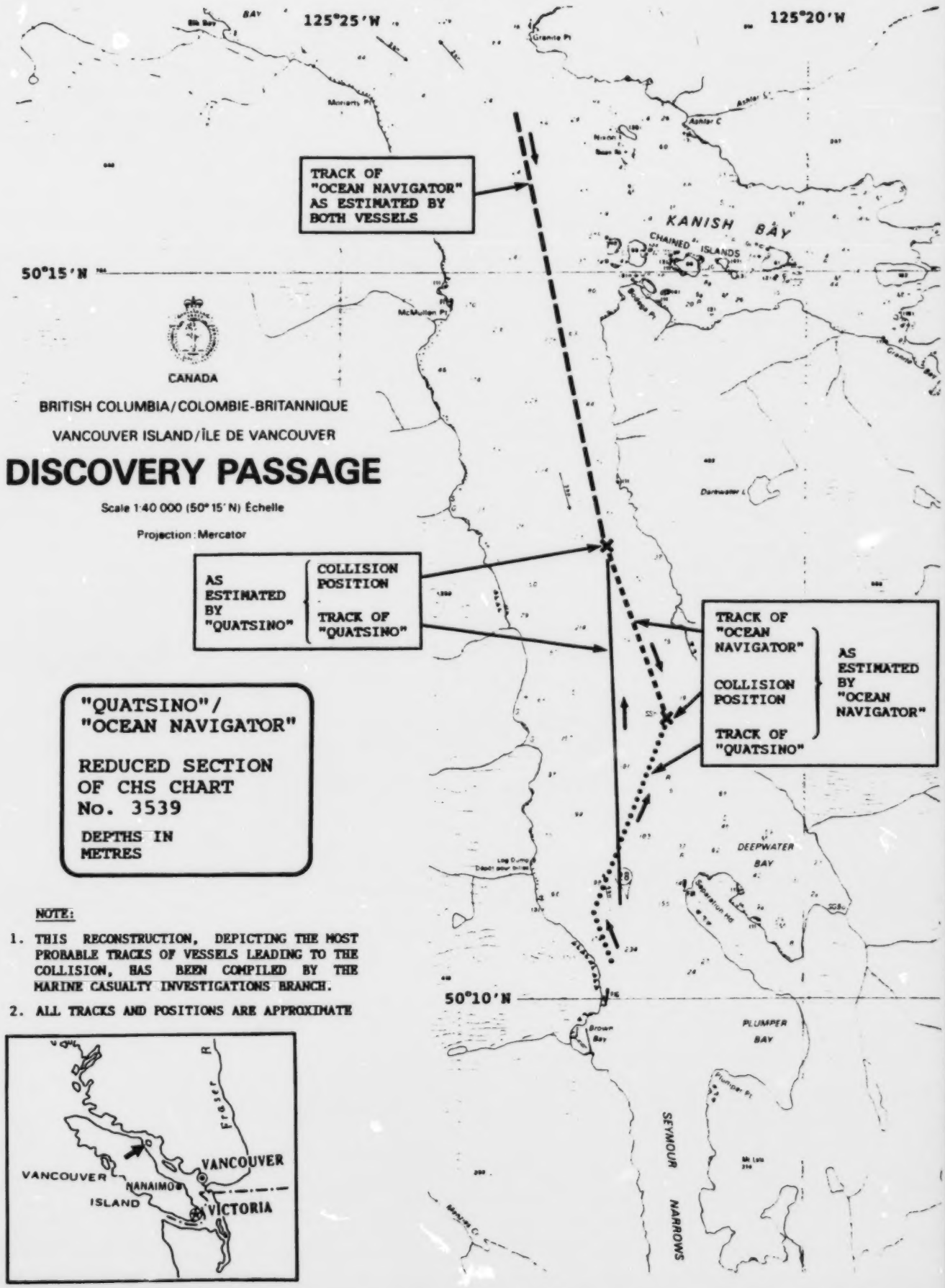
There was indecision in the wheelhouse of the "QUATSINO" when faced with a collision situation.

The skipper of the "QUATSINO" was not certificated in accordance with the requirements of the Canada Shipping Act.

The "QUATSINO" did not carry out an effective damage survey.

The surrounding area offers little opportunity for beaching, being mainly steep-sided cliffs.

The "OCEAN NAVIGATOR" was not equipped to switch to hand steering in reduced visibility as recommended in the Code of Nautical Procedures and Practices.



NOTE:

1. THIS RECONSTRUCTION, DEPICTING THE MOST PROBABLE TRACKS OF VESSELS LEADING TO THE COLLISION, HAS BEEN COMPILED BY THE MARINE CASUALTY INVESTIGATIONS BRANCH.
2. ALL TRACKS AND POSITIONS ARE APPROXIMATE

Showing damage to stem of "BRITISH TAY".
Vue des dommages à l'étrave du "BRITISH TAY".

Showing damage to stern of "CANADA MARQUIS".
Vue des dommages à l'arrière du "CANADA MARQUIS".

"CANADA MARQUIS"/"BRITISH TAY"

Collision in the Gulf of St. Lawrence, March 17, 1990.

Summary

The "CANADA MARQUIS" is a 21,548 gross ton, seven hold bulk carrier, strengthened for heavy cargoes and constructed to the standards of Lloyd's Ice Class 3. Her accommodation, machinery space and navigating bridge are located aft and her 10,880 BHP diesel main engine drives a controllable-pitch propeller. The Bermudan-registered "BRITISH TAY", a conventional oil tanker of 15,650 gross tons, also has her accommodation, machinery space and navigating bridge located aft. Her 9,000 BHP diesel main engine is bridge controllable and drives a fixed-pitch propeller.

On March 17, 1990, the two vessel were outbound towards the open ocean, proceeding in a generally SE'ly direction in the Gulf of St. Lawrence in restricted visibility. The two vessels had come up with one another the previous day and, with there being no dedicated icebreaker escort for them, a tacit understanding had come about that they would continue together and assist each other. They were making difficult progress in heavy ice conditions with the ice-classed "CANADA MARQUIS" mostly opening a path while the "BRITISH TAY" followed in her track. The "CANADA MARQUIS" regularly advised the "BRITISH TAY" on VHF when she encountered thick ice and her speed was being reduced.

The two vessels had been forced to back up in the heavy ice conditions and as they resumed forward progress shortly after noon the visibility was reduced to less than a mile and the two vessels were separated by about half a mile. As she reached the point where they had been impeded before, the "CANADA MARQUIS", without warning, stopped, again beset in the ice. The main engine of the "BRITISH TAY", which was turning 'slow ahead', was immediately ordered to emergency 'full astern' and the helm 'hard-a-starboard' but she could not get out of the track in the ice left by the "CANADA MARQUIS" and, at 1240, she struck the latter's stern heavily.

There was considerable damage to both vessels but the collision did not cause any injuries. Some slight pollution was caused by a leak of hydraulic oil from the boss of the controllable-pitch propeller of the "CANADA MARQUIS". Temporary repairs to the "BRITISH TAY" cost $50,000 while the total repair cost for the "CANADA MARQUIS", including dry-docking, was some $1.15 million.

Findings

On March 17, 1990, the oil tanker "BRITISH TAY" heavily struck and caused considerable damage to the stern of the bulk carrier "CANADA MARQUIS" while the latter was beset in ice in the Gulf of St. Lawrence. The two vessels were sailing in convoy in very

difficult ice conditions and conditions of restricted visibility.

It would appear that the following factors contributed to causing the collision:

Both Vessels

- did not ensure that an effective system of communication was established, and maintained, between them.

The "BRITISH TAY"

- did not assess the risk of collision in time; and
- was then unable to stop in the distance separating her from the other vessel because of her speed and handling characteristics.

The "CANADA MARQUIS"

- did not monitor that the vessel astern was maintaining a reasonable separation;
- did not have sufficient personnel on the bridge to ensure immediate communication with the "BRITISH TAY"; and
- suddenly became beset in the ice and was unable to inform the other vessel in time.

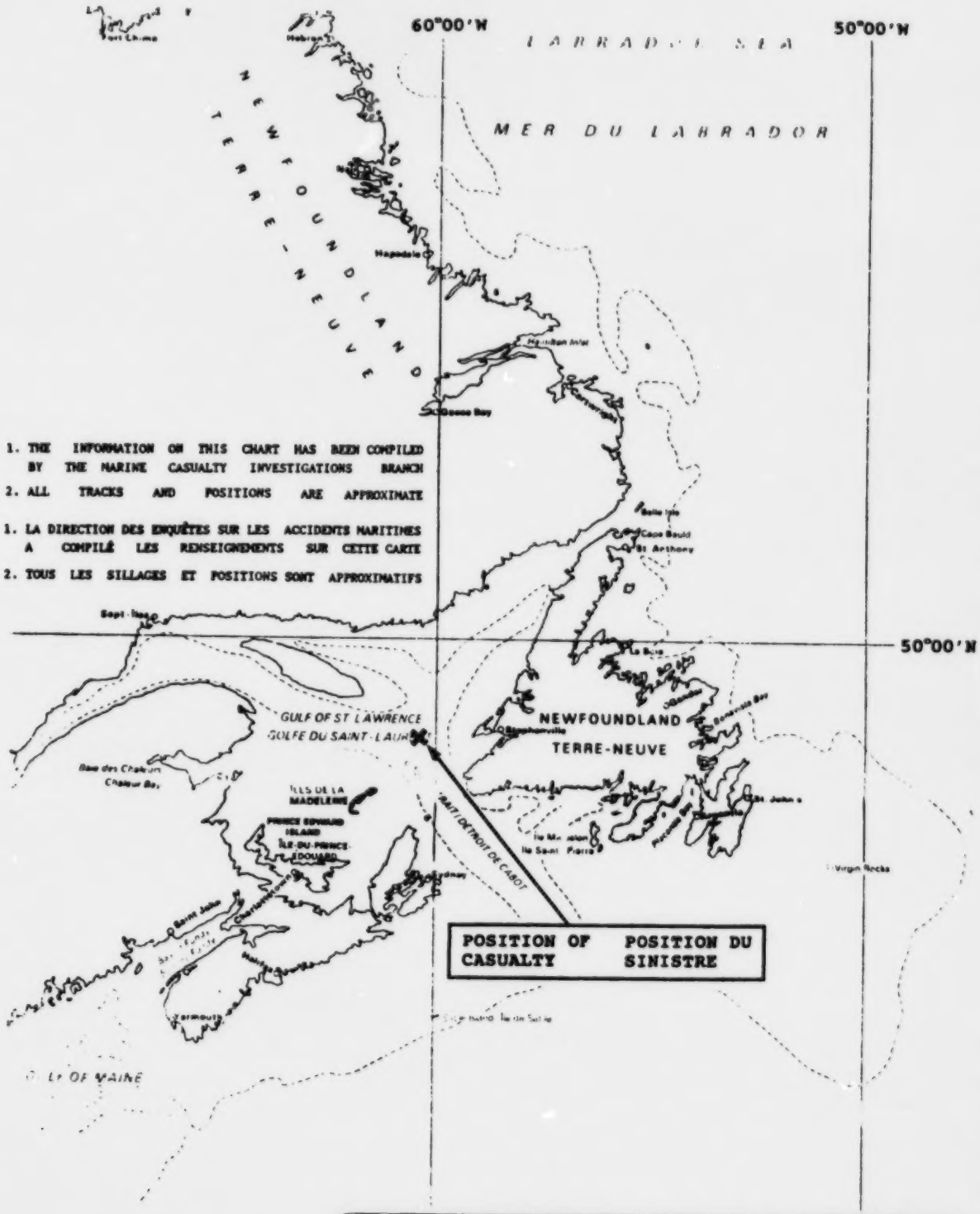
Other Findings

An underwater inspection carried out after the accident revealed that the propeller of the "BRITISH TAY" was sufficiently damaged to reduce the effective power of the engine while going astern. However, the investigation was unable to establish whether it was damaged before the collision.

There was no radio operator aboard the "CANADA MARQUIS", so that the watch officer was often obliged to leave the bridge to send radio messages.

No icebreaker was specifically assigned to escort the two vessels.

The "BRITISH TAY" was sailing in extremely difficult ice conditions even though she was not ice-strengthened according to classification standards.

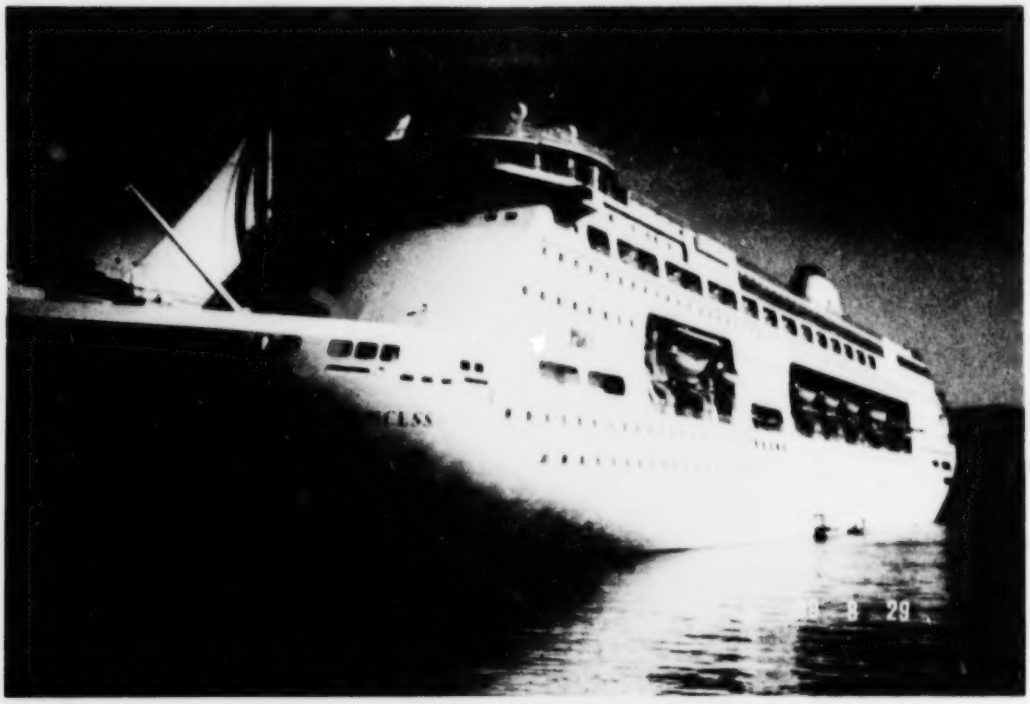


1. THE INFORMATION ON THIS CHART HAS BEEN COMPILED BY THE MARINE CASUALTY INVESTIGATIONS BRANCH
2. ALL TRACKS AND POSITIONS ARE APPROXIMATE

1. LA DIRECTION DES ENQUÊTES SUR LES ACCIDENTS MARITIMES A COMPILÉ LES RENSEIGNEMENTS SUR CETTE CARTE
2. TOUS LES SILLAGES ET POSITIONS SONT APPROXIMATIFS

"CANADA MARQUIS"/"BRITISH TAY"

THIS INSERT FROM THE CATALOGUE OF CHS MARINE CHARTS MAY NOT BE USED FOR NAVIGATION	CETTE CARTOUCHE DU CATOLOGUE DES CARTES MARINES DU SHG NE DOIT PAS SERVIR À LA NAVIGATION



"STAR PRINCESS"

"KAREN WEST"

View of stern of "STAR PRINCESS"

Vue de l'arrière du "STAR PRINCESS"

"STAR PRINCESS"/"KAREN WEST"

Collision outside Hardy Bay, B.C., August 14, 1989

Summary

The "STAR PRINCESS" is a 63,524 gross ton, Liberian registered, passenger vessel engaged in world cruising. She has twin propellers, a single rudder and is fitted with two bow thrusters and two stern thrusters. The "KAREN WEST" is a typical west coast gillnetter of wooden construction with her wheel-house structure forward of amidships. She is of 10.85 gross tons and is fitted with stabilizer outriggers.

In the early morning hours of August 14, 1989, the "STAR PRINCESS" was approaching Port Hardy on Vancouver Island having left her berth in Vancouver the previous evening on a scheduled cruise to Alaska. The weather was calm and clear as the vessel proceeded at reduced speed to make an 0700 arrival at Port Hardy.

The waters in the approaches to Port Hardy were included in a 3 1/2 day salmon fishing 'opening' which had commenced at 1800 the previous day and a fleet of, reportedly, some 100 fishing vessels were operating in that area as the "STAR PRINCESS" approached. The pilot on the "STAR PRINCESS" was in VHF communication with several of the fishing vessels as she manoeuvred through the fleet and the passenger vessel was using her thrusters to assist with course alterations as she, at times, barely made way through the water. Such was the case as the "STAR PRINCESS" passed close to the "KAREN WEST" and, stopped in the water, she swung on to a more northerly heading to give herself greater clearance off Masterman Island en route to Port Hardy.

The "KAREN WEST" at this time was drawn rapidly towards the stern of the "STAR PRINCESS" and the operator of the "KAREN WEST", who had been hauling in his net, began to pay out the net to counteract this but the fishing vessel was pulled under the stern of the passenger vessel. The port stabilizer outrigger of the "KAREN WEST" was broken off before she came clear and the operator of the fishing vessel had then to cut his net free as he found himself being towed astern. The time was about 0600.

After the collision the "KAREN WEST" proceeded into Port Hardy and secured at the government wharf. The incident was reported to the Canadian Coast Guard by telephone by the operator of the "KAREN WEST". The "STAR PRINCESS" continued on her northwesterly course for about 3 minutes before swinging round to head into Port Hardy where she anchored at 0703. An analysis of paint samples indicated that flakes of paint found on the stern roller of the "KAREN WEST" had originated on the "STAR PRINCESS", corroborating that contact between the vessels had occurred.

Findings

On the morning of August 14, 1989, as the Liberian - registered cruise vessel "STAR PRINCESS" was approaching Port Hardy, B.C., she passed through a fleet of fishing vessels and was in collision with the gillnetter "KAREN WEST", causing the fishing vessel, which suffered minor damage, to have to cut clear her net which had fouled the passenger vessel.

It would appear that:

- the "STAR PRINCESS" passed close aboard the "KAREN WEST which was taking in her net;
- the "STAR PRINCESS" altered course before the "KAREN WEST" had cleared her stern;
- the net of the "KAREN WEST" fouled the propeller or hull of the "STAR PRINCESS"; and
- the "KAREN WEST" came under the stern of the "STAR PRINCESS" and had to cut her net to be able to manoeuvre clear.

Other Findings

The "KAREN WEST" was showing incorrect fishing lights.

The "KAREN WEST" did not attempt to communicate by radio with the "STAR PRINCESS".

The "STAR PRINCESS" did not keep a proper look-out astern.

The number of fishing vessels in the area could have decreased significantly after 0700.

NOTE:

1. THIS RECONSTRUCTION, DEPICTING THE MOST PROBABLE TRACKS OF VESSELS LEADING TO THE COLLISION, HAS BEEN COMPILED BY THE MARINE CASUALTY INVESTIGATIONS BRANCH.
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NOTA:

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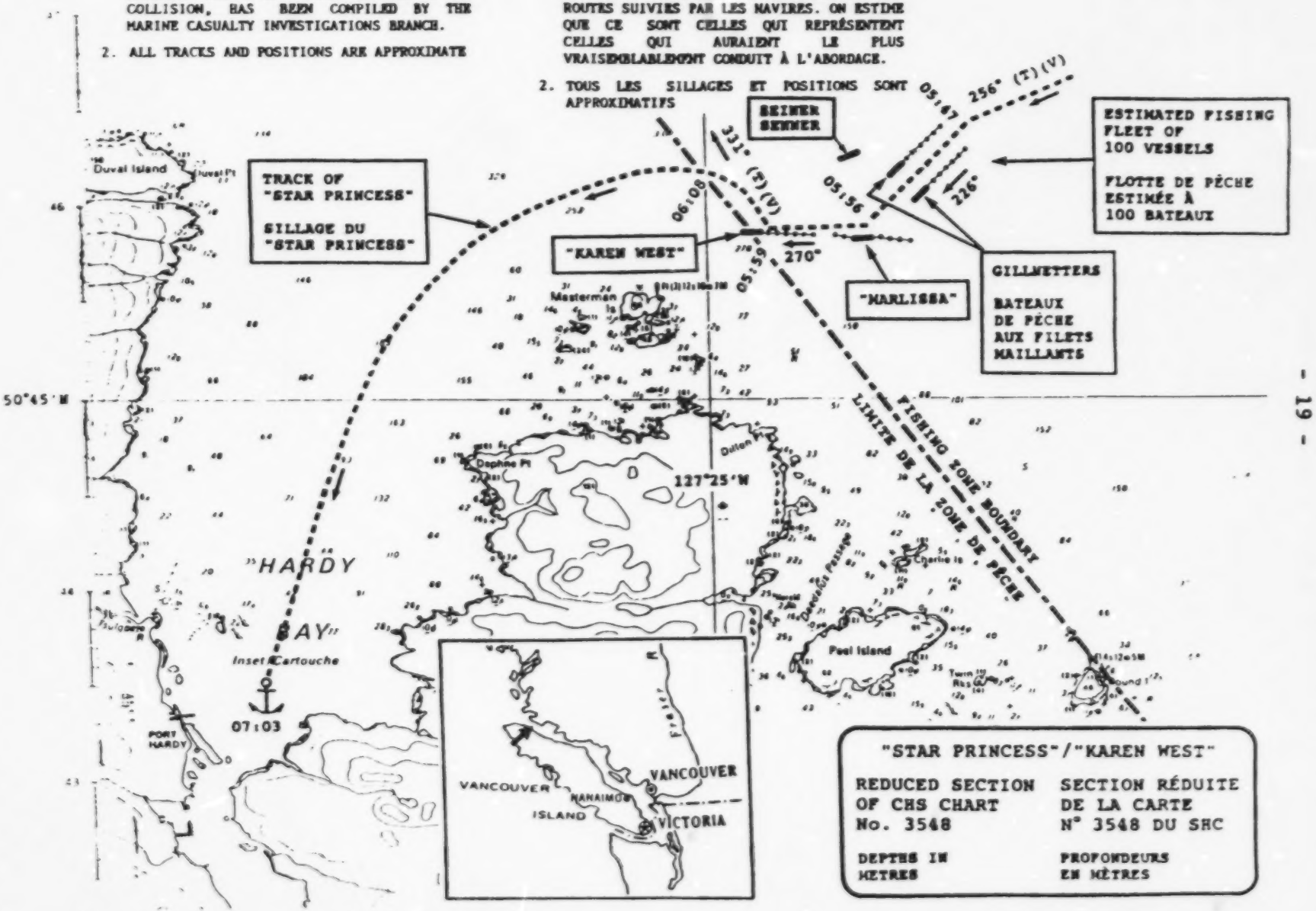
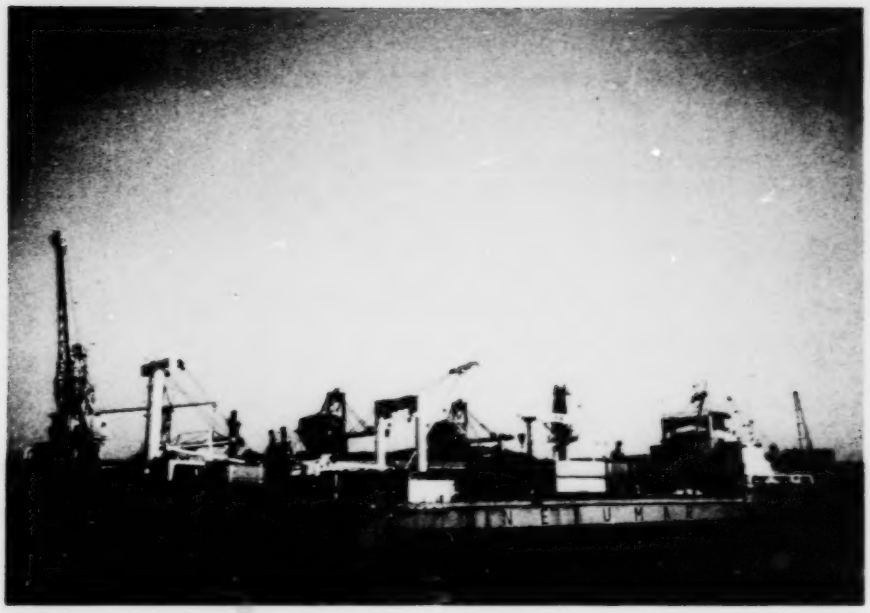




"NETUNO"

"CAPITAIN DIAMANTIS"

"NETUNO"/"CAPTAIN DIAMANTIS"

Striking in La Baie, Quebec, October 25, 1989.

Summary

The "NETUNO" is a 14,150 gross ton, Brazilian-registered general cargo vessel with one of her seven holds located abaft her engine-room and accommodation. The "CAPTAIN DIAMANTIS" is a 30,193 gross ton Greek-registered bulk carrier with her engine-room and accommodation located aft.

On the morning of October 25, 1989, the "CAPTAIN DIAMANTIS" was secured at Duncan Wharf discharging bauxite at berth No. 2, her stern overhanging the Wharf by some 10 m. At this time the "NETUNO" was inbound under the conduct of a pilot and would eventually berth at the adjacent Powell Wharf to work general cargo but was immediately to anchor to the north of Duncan Wharf while awaiting a berth. The wind and sea were calm and there was a bank of shallow fog lying in the approaches to the port as the "NETUNO" proceeded up the Saguenay river.

At a distance from the port variously estimated at between 2 and 3 miles the "NETUNO" entered the area of reduced visibility and the vessel's speed was reduced and the port anchor prepared for lowering. The chimneys of a mill to the south of the port area were reportedly still visible as the vessel continued towards the anchorage position. The "NETUNO" re-emerged into clear weather at a distance estimated variously at between a half and one mile from the port. The vessel was found to be closer to the wharves than anticipated and the order was given to put the main engine astern with the wheel hard over to starboard. The main engine did not reverse as quickly as had been anticipated and the starbound anchor was let go but her momentum carried the "NETUNO" onto the "CAPTAIN DIAMANTIS" secured at Duncan Wharf. The starboard quarter of the "CAPTAIN DIAMANTIS" was first struck by the port forecastle bulwark of the "NETUNO" and then by her port side from near amidships aft to the accommodation such that three containers on the deck of the "NETUNO" were damaged with one falling on to the poop deck of the "CAPTAIN DIAMANTIS". The "NETUNO" continued ahead and briefly grounded forward before backing off. As she moved astern she again struck the "CAPTAIN DIAMANTIS" before coming to rest with the sterns of the two vessels about 10 m apart. The time was about 0850.

It was decided not to use the main engine of the "NETUNO" but rather employ the services of the tug "ALEXIS SIMARD" to move the "NETUNO" to the anchorage and this was done with the vessel anchoring at 0928.

The cost of repairs to the "CAPTAIN DIAMANTIS" was estimated at $235,000 while those to the "NETUNO" were approximately $49,000.

There were no injuries as a result of the casualty and some spillage of aluminum silicate from a damaged container was considered to have caused only minor pollution.

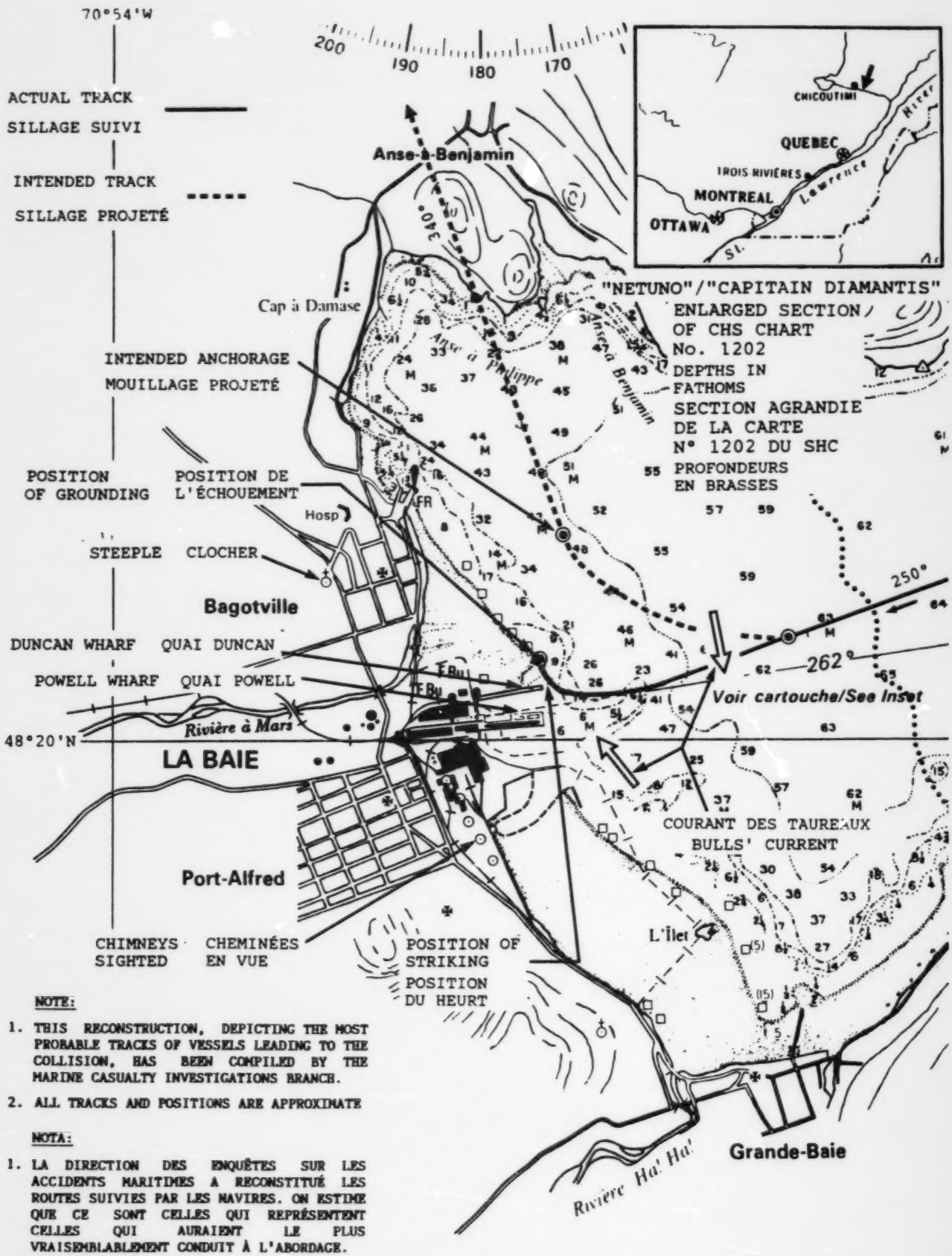
Findings

On October 25, 1989, while the Brazilian vessel "NETUNO" was under the conduct of a pilot and proceeding to the anchorage off the port of La Baie, Quebec, she struck the Greek vessel "CAPTAIN DIAMANTIS", which was secured at Duncan berth No. 2 wharf. It appears that the following factors contributed to the casualty:

- the approach was not made directly to the intended anchorage position;
- the fact that the port anchor had been lowered to the bottom, in conjunction with the southward-setting current, hampered the vessel's swing to starboard;
- the fog bank hanging over the approaches to the port area distorted visual perception of the approach distance;
- under conditions of restricted visibility, a continuous radar watch was not kept;
- the approach speed was not appropriately reduced for the circumstances, and
- the emergency stop was hindered by the delay in reversing the main engine.

Other findings

The general alarm was sounded aboard the "NETUNO", but no warning signal was given by means of at least five short blasts on the ship's whistle to warn the crew members on the "CAPTAIN DIAMANTIS" and the longshoremen who were working at Duncan wharf.



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"GEORGELLA"

Hauled up on beach near Needles landing.
Haler sur la rive près du débarcadère de Needles.

"LC 10"

Ferry propelled by replacement tug.
Bac propulsé par un remorqueur de remplacement.

"GEORGELLA"

Swamping in Arrow Lake, B.C., May 23, 1989.

Summary

The "GEORGELLA" is a small tug of 8 gross tons which is used as the means of propulsion for the cable ferry "LC10" when the "LC10" is required to operate between Needles and Fauquier in Arrow Lake, B.C. as a replacement for the regular ferry, "NEEDLES". Propulsive power is transfered from the tug to the ferry through a swivel which connects a vertical pillar braced and welded to the stem of the tug and a hinged tubular bracket on the side of the ferry.

In May, 1989, the two vessels were in operation, replacing the "NEEDLES", when the "GEORGELLA" had problems with her fuel system and it was discovered that her tanks were contaminated with sand. On May 23, with a view to ending the problems, a tank was installed on the tug's after deck and filled with 2,300 L of fuel. The ferry then resumed service with a temporary fuel piping system but the service had to be interrupted again because of bad weather. Later, when wave conditions were deemed acceptable the ferry resumed service but, after running into a squall in the middle of the lake, the "GEORGELLA" developed a sudden list, was downflooded and sank, still secured by her bow alongside the cable ferry.

No one was injured in the casualty and the pollution caused by the leakage of oil was deemed to be minor. The cost of repairs to the damaged tug amounted to about $60,000.

Findings

On May 23, 1989, the tug "GEORGELLA" which served as the means of propulsion for the ferry "LC10" sank in Arrow Lake, B.C. as a result of downflooding and loss of stability. It would seem that the following factors contributed to the foundering:

- the installation of a fuel tank on the afterdeck reduced the after freeboard and transverse stability;
- because the stem of the tug was attached to the metal pushing frame held rigid by a securing pin, her ability to trim, pitch and heel freely, and respond naturally to wave motions, was limited;
- the combined effect of the squall which struck her on the beam and the pitching induced by the rolling of the ferry led to the shipping of water and downflooding;

- the shipped water on deck and the accumulated downflooding water in the bilges of the engine compartment, as well as the fuel in the partly filled tanks, caused free surface effects and reduced transverse stability;

- the water shipped and retained on the afterdeck, which could not run off through the already immersed freeing ports because of the low freeboard, increased the free surface effect and heeling moment;

- as a result the vessel listed to port;

- the reserve buoyancy of the external oil fuel tank enabled the tug to right itself momentarily but the progressive downflooding of the engine compartment and the lazaret continued and caused her to founder stern first, and

- the tug remained suspended from the ferry by the swivel fitting.

Other Findings

Stability data had not been previously prepared nor was it required by regulation and it would have applied only to an unconstrained vessel. Because of the constraining effect of the bow swivel attachment of non-free-floating condition existed at the time of the sinking;

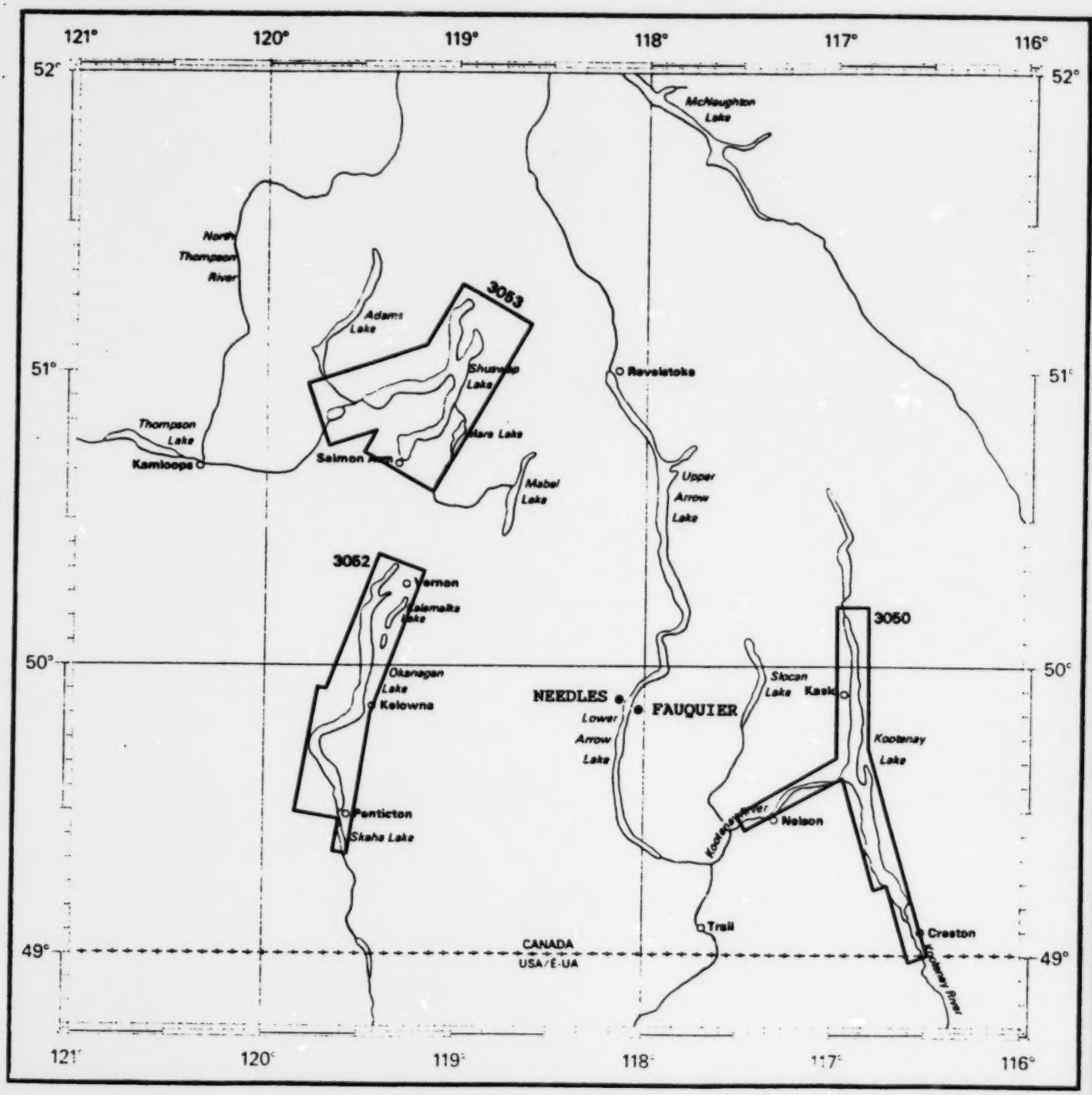
The original transverse stability was reduced when the wheelhouse was raised during a prior refit and when the oil fuel tank was installed above the after deck before the sinking the stability was again altered;

Flooding of the engine compartment and the lazaret occurred as the tug was on its beam ends because the engine-room hatch and lazaret manhole covers were probably not secured watertight;

The small area of the freeing ports prevented the water on the afterdeck from running off quickly when seas were shipped;

No effective prior technical check on the modification was carried out and the tank fitted was large for the intended purpose.

"GEORGELLA"

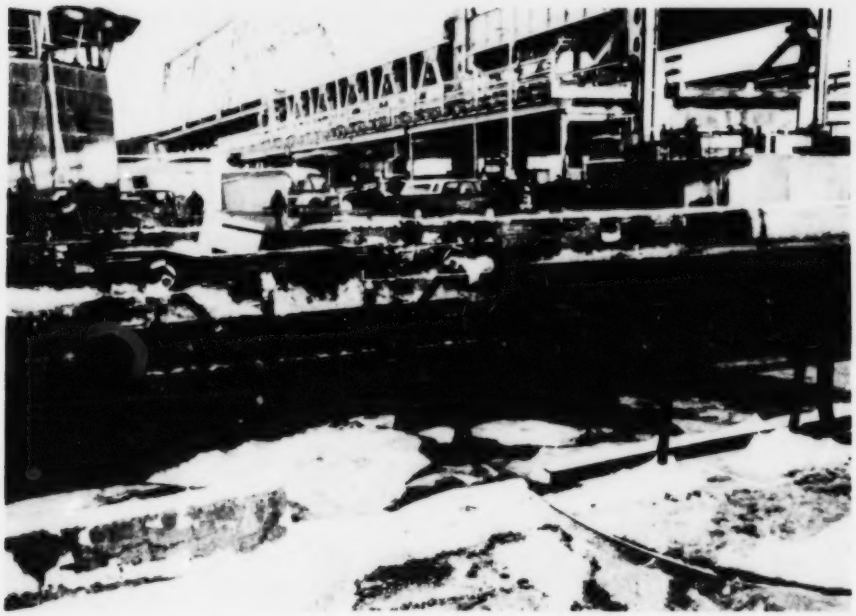


SECTION OF CHS MARINE CHART CATALOGUE, BRITSH COLUMBIA

SECTION DU CATALOGUE DES CARTES MARINES DU SHC COLUMBIE-BRITANNIQUE

The "ENERCHEM ASPHALT" secured to the approach wall below St. Lambert lock on December 5, 1989.

Le "ENERCHEM ASPHALT" amarré au mur d'approche d'aval de l'écluse Saint-Lambert le 5 décembre 1989.



Damaged lock gate.

Porte de l'écluse endommagée.

"ENERCHEM ASPHALT"

Struck lock gate, St. Lambert lock, St. Lawrence Seaway, December 3, 1989.

Summary

The "ENERCHEM ASPHALT" is a 5,836 gross ton tanker with her engine room, accommodation and navigating bridge located aft. The vessel's main engines develop 4,500 BHP and drive a single variable pitch propeller, controllable from the bridge.

On the afternoon of December 3, 1989, when the "ENERCHEM ASPHALT" was testing her navigation equipment prior to leaving the wharf at Tracy, Quebec, where she had discharged her cargo, the propeller pitch slipped into the full ahead setting. Believing that there was air in the system due to the cleaning of the filters during the day, the engineers purged the system and readjusted the bypass valve opening pressure. After tests to ensure that the KaMeWa system was operating properly, the "ENERCHEM ASPHALT" departed upriver towards the Seaway. The passage from Tracy to the St. Lambert lock, including the mooring manoeuvres at the approach wall downstream of the lock, were carried out normally and without incident. However, when the "ENERCHEM ASPHALT" was entering the St. Lambert lock, the propeller pitch jammed once again in the full ahead setting.

The vessel had been informed that, because of the ice, the ship arrester was in the raised position and she was advised of the appropriate, more cautious, procedure to be followed on entering the lock, as was the normal practice at St. Lambert in such circumstances. The master was on the bridge, with the conduct of the vessel, and there was a helmsman at the wheel. As the "ENERCHEM ASPHALT" entered the lock, the lock master asked the vessel to reduce her speed which seemed excessive, but the vessel was seen to accelerate. On the bridge, wishing to reduce the forward speed and to align the vessel in the lock, the master reversed the propeller pitch to 'slow astern'. Seeing the vessel apparently increase speed, the master increased the propeller pitch to 'full astern'. The propeller pitch 'wrong way' alarm sounded and the master found the engine RPM increasing and the pitch at its maximum ahead setting. The master then set the pitch control to neutral, activated the main engine 'Emergency Stop' and sounded the general alarm. Four mooring lines were run ashore but two parted as they took the weight and the stem of the vessel struck the lock gate heavily. The "ENERCHEM ASPHALT" rebounded some 15 m before coming to rest.

The lock gate opened about 2 to 2.5 m and water poured in pinning the "ENERCHEM ASPHALT" against the wall of the lock. The following day the vessel was moved to the approach wall to complete repairs to the propeller pitch control system. The casualty interrupted marine traffic for some 2 days 8 hours with a total of

17 vessels suffering delays. The damaged gate had to be replaced and the cost of the damage to the lock gate was estimated at $750,000.

Findings

At about 2145, December 3, 1989, the Canadian tanker "ENERCHEM ASPHALT" struck the lock gate heavily due to the propeller pitch being jammed at full ahead.

It appears that the following factors contributed to the casualty:

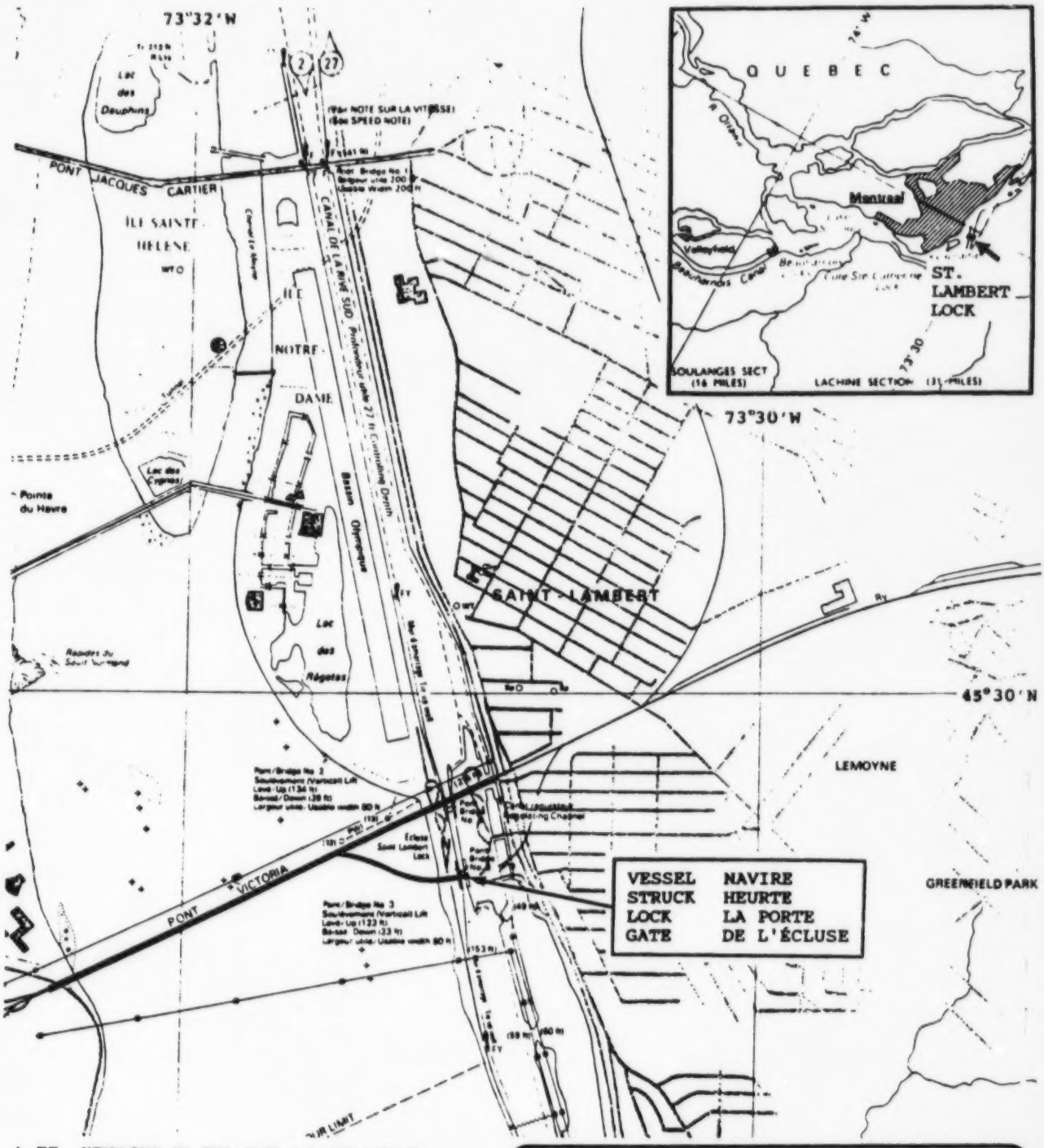
- contamination of the oil in the KaMeWa system;
- due to the contamination, the secondary filter was blocked and the increased pressure opened the bypass valve;
- contaminated oil reached the telemotor transmitter and dirt particles blocked the piston at full ahead.

Other findings

The source of this contamination would appear to be the after well.

After an engine room fire in August 1989, the KaMeWa system had been purged twice before being returned to service.

During the period when ice is prevalent, the ship arresters in the locks may be out of service and, in the case at hand, the usual procedure was followed by the Seaway.



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"ENERCHEM ASPHALT"

REDUCED SECTION OF CHS CHART No. 1409

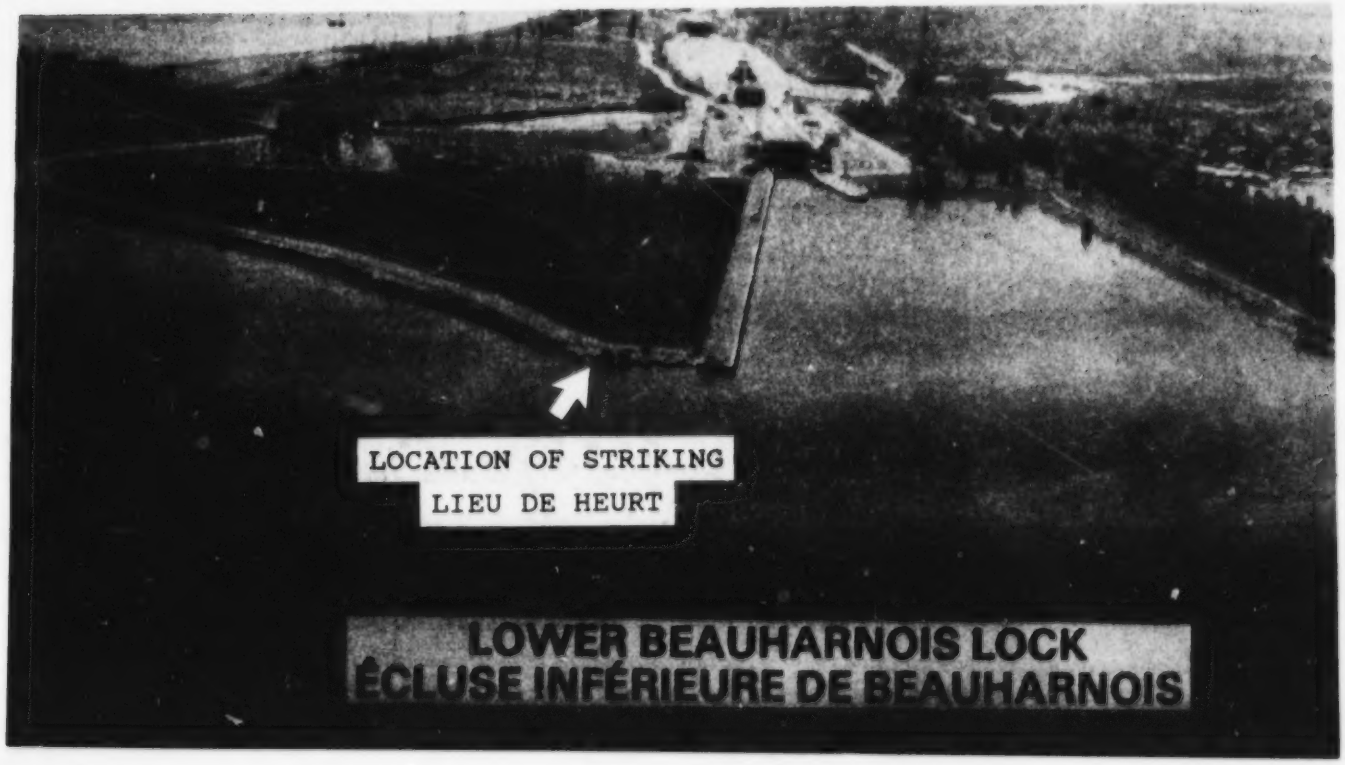
SECTION RÉDUITE DE LA CARTE N° 1409 DU SHC

DEPTHS IN FEET

PROFONDEURS EN PIEDS

The "GENERAL VARGAS" secured at the approach wall at lower Beauharnois lock.

Le "GENERAL VARGAS" amarré au mur d'approche de l'écluse inférieure de Beauharnois.



"GENERAL VARGAS"

Struck approach wall, lower Beauharnois lock, November 30, 1989

Summary

The "GENERAL VARGAS" is a 8,341 gross ton, geared bulk carrier of Philippine registry, with her engine-room, bridge and accommodation located aft. The main engine which can be controlled from the bridge develops 6,000 BHP and drives a single fixed-pitch propeller.

On November 30, 1989, the "GENERAL VARGAS" arrived in Montreal in preparation for entering the St. Lawrence Seaway. She was bound from Finland to Cleveland, Ohio, with a cargo of steel coils and plate. At 0922, in clear weather, she entered St. Lambert lock, where a Seaway pilot replaced the harbour pilot, and by 1220 was clearing the South Shore Canal to start the passage across Lac Saint-Louis. Because of the relatively long duration of the crossing, for reasons of economy the main engine was changed over from diesel fuel to heavy oil as the vessel's speed was set to 'full ahead'. At 1300 the bridge notified the engine-room to change back to diesel oil in preparation for manoeuvring at the lower Beauharnois lock.

At 1325, speed was reduced as the vessel began to turn to port towards the lock, with the pilot, who had the conduct of the vessel, intending to move her along the approach wall into the lock, the normal manoeuvring procedure. At 1329 the main engine was stopped and the vessel continued towards the lock under her own way. When approximately 200 m off, the orders 'hard-a-starboard' and 'dead slow ahead' were given to bring the vessel alongside the approach wall, but the main engine would not start and the "GENERAL VARGAS" was set by the moderate northwesterly wind towards the rock-fill at the extremity of the approach wall. Despite an eventual successful attempt to start the engine 'full astern', the vessel's bulbous bow struck the rock-fill heavily. After the impact, the "GENERAL VARGAS" made a new approach to the wall and the main engine functioned normally. She was secured on the approach wall until air compressers and the shifting of fuel and some cargo could offset the increase in her forward draught caused by flooding of the forepeak tank. After inspection, the vessel was permitted to resume her voyage at 2028, December 1. The cost of permanent repairs was estimated at $300,000, with expenses due to casualty amounting to a further $100,000.

Findings

On November 30, 1989, while manoeuvring to enter the lower Beauharnois lock on the St. Lawrence Seaway, the upbound vessel "GENERAL VARGAS" heavily struck the rock-fill at the end of the approach wall downstream from the lock, causing major damage to the vessel's bow.

It appears that the following factors contributed to causing the casualty:

- under her own headway the vessel was making her approach to the lower wall when the main engine would not start ahead;

- the approach chosen was a trajectory swinging towards the wall;

- insufficient notice had been given to the engine room regarding the required change over to a lighter grade of fuel;

- the main engine would not start ahead, most probably because of two factors:

  (i) the fuel in the lines was still bunker oil, in a thickened state,

  (ii) the bridge engine control start position was set at 'dead slow ahead', rather than a higher speed; and

  - her headway and the wind carried her into the rock fill.

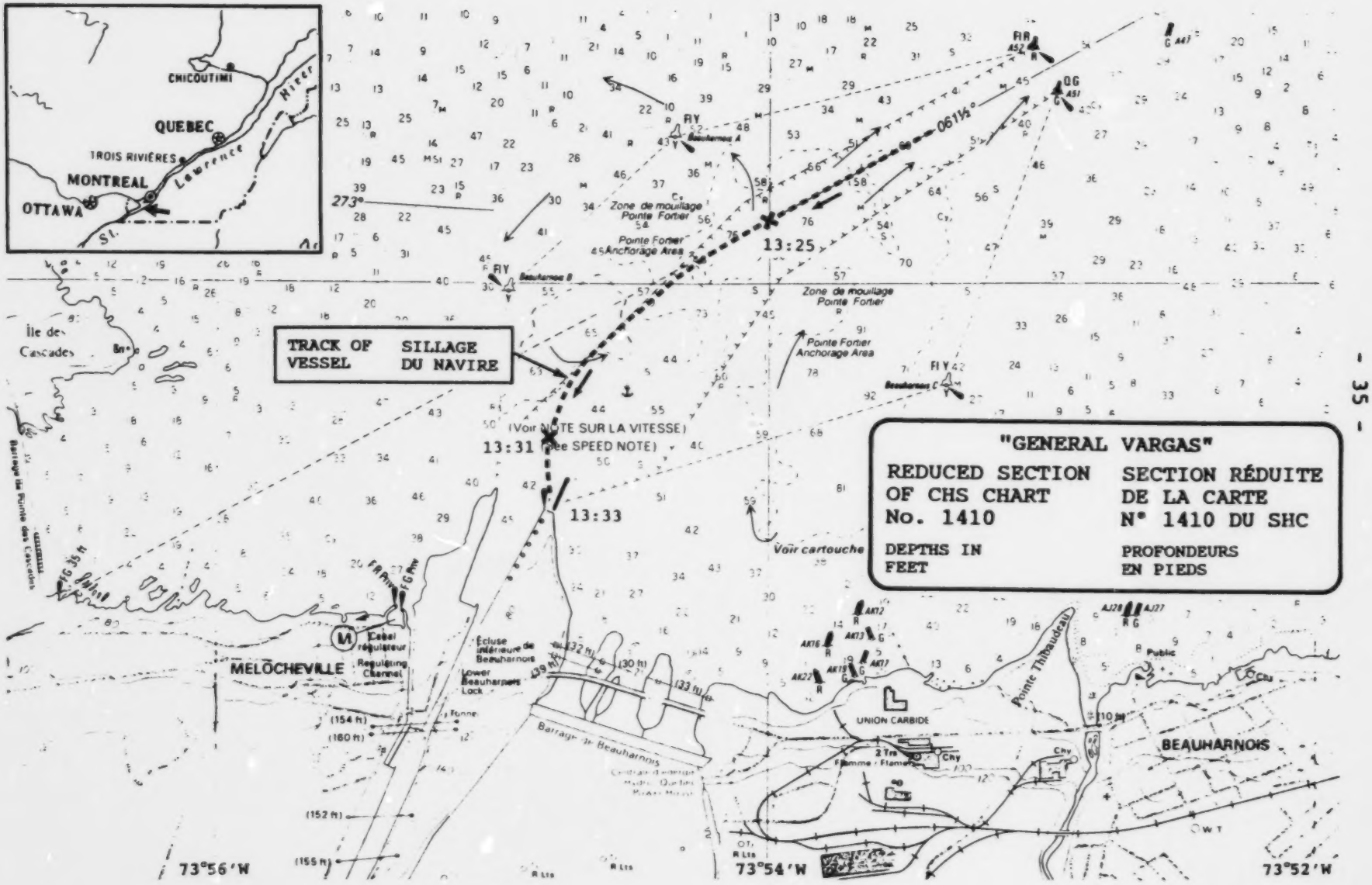
Other Findings

The approach was effected at a speed consistent with the moderate northwesterly wind on the starboard quarter.

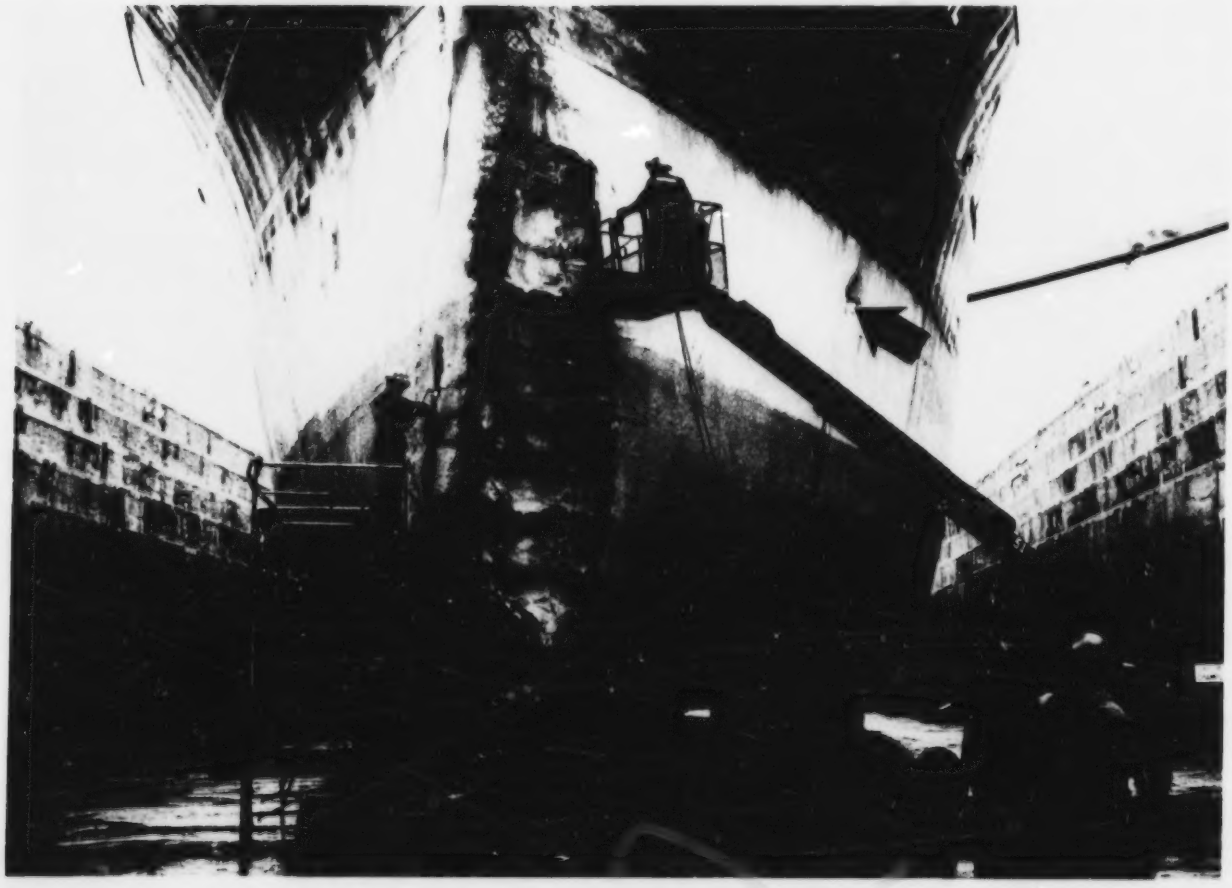
However, in the vicinity of the approach wall, turning towards the wall with the engine stopped is a risky manoeuvre entirely dependent upon a successful engine start.

The temperature and viscosity of the fuel supplied to the main engine were not checked effectively.

All subsequent attempts to start the main engine were successful.


CHICOUTIMI
QUEBEC
TROIS RIVIÈRES
MONTREAL
OTTAWA
St. Lawrence River
TRACK OF VESSEL
SILLAGE DU NAVIRE
273°
061½°
13:25
13:31
13:33
(Voir NOTE SUR LA VITESSE)
(See SPEED NOTE)
Zone de mouillage Pointe Fortier
Pointe Fortier Anchorage Area
Île des Cascades
Barrage de Pointe des Cascades
MELOCHEVILLE
Canal régulateur
Regulating Channel
Écluse inférieure de Beauharnois
Lower Beauharnois Lock
Barrage de Beauharnois
UNION CARBIDE
Pointe Thibaudeau
BEAUHARNOIS
Voir cartouche
"GENERAL VARGAS"
REDUCED SECTION OF CHS CHART No. 1410
SECTION RÉDUITE DE LA CARTE N° 1410 DU SHC
DEPTHS IN FEET
PROFONDEURS EN PIEDS
73°56'W
73°54'W
73°52'W

"MISTRAL"



Vessel in dry-dock at Lauzon. Note damage to bow. Arrow indicates hole in shell plating.

Navire en cale sèche à Lauzon. Nota: Les dommages à l'avant et la flèche montrant le trou dans le bordé.

"MISTRAL"

Struck wharf at Pointe-au-Pic, Que, September 16, 1989.

Summary

The "MISTRAL" is a 6,728 gross ton Cypriot-registered general cargo vessel with her navigating bridge, accommodation and machinery space located aft.

In the early morning hours of September 16, 1989, the "MISTRAL" was approaching the wharf at Pointe-au-Pic where she was to complete loading a cargo of timber for Europe. The vessel had already loaded a part cargo at the ports of Baie-Comeau and Grande-Anse. The night was clear and the wind was calm as the "MISTRAL" reduced speed to 'half ahead' and turned to head into the flood tide, steering for the eastern end of the wharf. The speed of the main engine was reduced as the vessel became closer to the wharf and at 4 cables the main engine was stopped with the pilot also ordering that one shackle be walked out on the starboard anchor cable at that time.

With the "MISTRAL" one cable from the wharf, the pilot ordered the main engine 'slow astern' and then successively, when the main engine did not respond, 'half astern' and 'full astern". It was several seconds after this last order when the main engine finally went astern but it was then too late and shortly afterwards, at approximately 0243, the bow of the "MISTRAL" struck the Pointe-au-Pic wharf heavily. The fore part of the vessel rebounded from the wharf and the stern, in turn, landed heavily on the quay.

It was then decided to pick up the anchor and make another approach to the wharf. On this second attempt, as the "MISTRAL" approached the wharf the forward spring line was run ashore. An attempt was then made to bring the vessel alongside by steaming slow ahead on the spring line with the wheel hard over to bring the stern in to the wharf. However, the fore part of the vessel struck the east corner of the wharf heavily and the ship's side plating was holed in way of No. 1 hold.

At 0350 the Vessel Traffic Services Centre in Quebec City was informed that the "MISTRAL" was berthed at the wharf but the casualty was not reported.

The strikings caused extensive damage to the wharf at Pointe-au-Pic and the hull damage to the vessel was such that she could not continue the voyage but had to dry-dock at Lauzon, near Quebec City, for repairs. Damage was estimated at $64,000 for the wharf and $300,000 for the "MISTRAL" which eventually completed loading at Pointe-au-Pic on October 6-9, 1989. There were no injuries nor was any pollution reported as a result of this casualty.

Findings

In the early hours of the morning of September 16, 1989, the Cypriot freighter "MISTRAL" struck the wharf at Pointe-au-Pic, Quebec heavily, a result of a manoeuvring error. The striking caused extensive damage to the vessel and to the wharf at Point-au-Pic.

It appears that the following factors contributed to causing the casualty:

- the tidal stream was strong and variable in direction at the time selected for berthing;
- the vessel approached the wharf too rapidly and, given her manoeuvring characteristics, efforts to reduce her speed were made too late;
- the delay in reversing the engine in order to slow the vessel was abnormally long and this delay remained unexplained;
- the angle of approach was too large, with the result that the vessel was not able to align herself in time;
- the length of anchor cable used was not long enough to allow the anchor to assist in controlling the vessel during the approach, and
- the pilot had not berthed a vessel at Pointe-au-Pic in the last fifteen years and, in that time, the configuration of the wharf had been radically altered.

Other Findings

The master was apparently unaware that the pilot had no practical experience berthing at the Pointe-au-Pic wharf.

The master had no prolonged rest in the three days preceding the casualty and was tired.

This is the fourth time in less than two years that a vessel has seriously damaged the wharf at Pointe-au-Pic.

The casualty was not reported to the appropriate authorities.

1. THE INFORMATION ON THIS CHART HAS BEEN COMPILED BY THE MARINE CASUALTY INVESTIGATIONS BRANCH

2. ALL TRACKS AND POSITIONS ARE APPROXIMATE

1. LA DIRECTION DES ENQUÊTES SUR LES ACCIDENTS MARITIMES A COMPILÉ LES RENSEIGNEMENTS SUR CETTE CARTE

2. TOUS LES SILLAGES ET POSITIONS SONT APPROXIMATIFS

POINTE-AU-PIC

Échelle 1:5 000 Scale

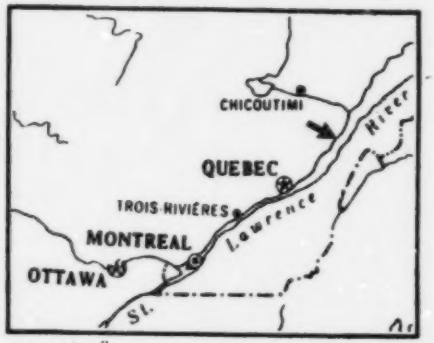
Feu / Light: Lat 47°37'22".10 N, Long 70°08'27".21 W (1977)

Levé en 1970 / Surveyed in 1970

Declinaison magnetique 020°W 1988 (5°W) Magnetic Variation

TRACK OF VESSEL ON FIRST ATTEMPT AT BERTHING

SILLAGE DU NAVIRE À SA PREMIÈRE TENTATIVE D'ACCOSTAGE



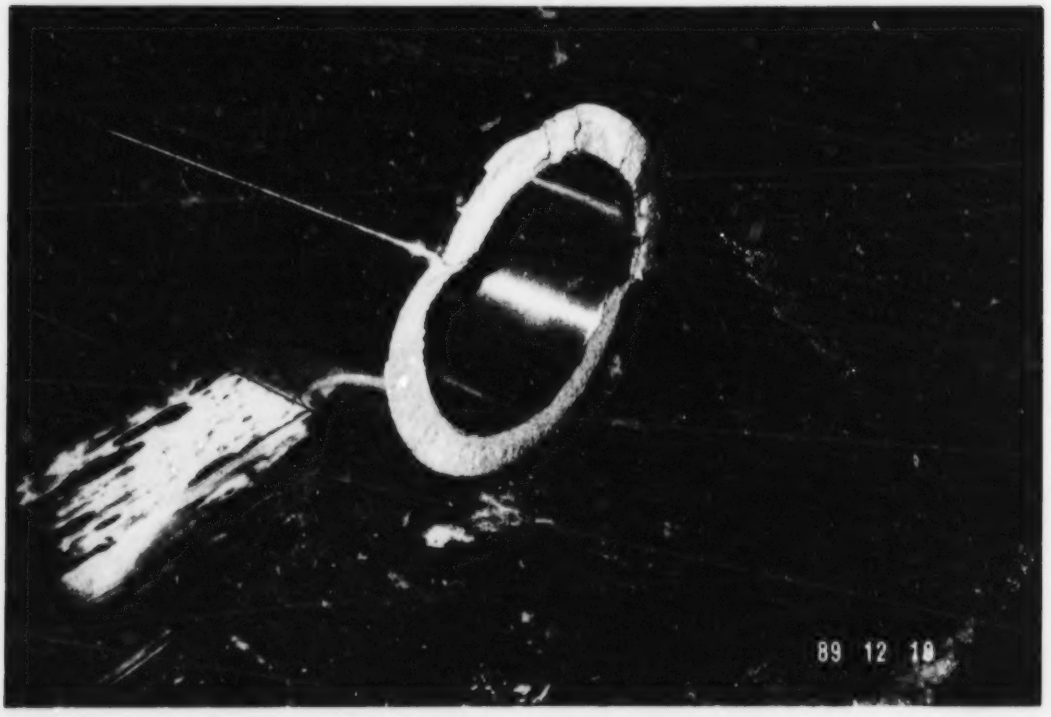
"MISTRAL"

REDUCED SECTION OF CHS CHART No. 1234	SECTION RÉDUITE DE LA CARTE N° 1234 DU SHC
DEPTHS IN METRES	PROFONDEURS EN MÈTRES

FIRST ATTEMPT	PREMIÈRE TENTATIVE	SECOND ATTEMPT	DEUXIÈME TENTATIVE

"ATLANTIC ERIE"

Showing collapsed self-unloading boom.
Vue du mât de déchargement écrasé.



Showing section of fractured piston rod.
Vue d'une section cassée de la tige de piston.

"ATLANTIC ERIE"

Collapse of self-unloading boom, Vancouver Harbour, B.C., December 15, 1989.

Summary

The "ATLANTIC ERIE" was built in 1985 and is a typical self-unloader of maximum Seaway dimensions. Her navigating bridge, accommodation and machinery space are located aft. She was built in Collingwood, Ont., under the Canadian flag but later re-registered in Nassau in the Bahamas.

The "ATLANTIC ERIE" arrived in Vancouver on December 10, 1989, with a cargo of phosphate rock from Tampa, Florida. Unloading at Vancouver Wharves was started at 0830, December 11, and continued until 2040, December 13. The vessel was starboard side to the wharf and her self-unloading boom was used to discharge the phosphate rock ashore.

After the holds were cleaned, loading of the vessel with a cargo of urea was started at 2200, December 14, using the shore installation's conveyors and equipment. To facilitate movement and operation of the shoreside loading equipment, at 0650, December 15, the vessel's self-unloading boom was swung clear of the after hatches.

The boom was raised to an angle of approximately 10° to 12° above the deck and swung out over the port side of the vessel to an angle of approximately 40° to the centreline of the vessel. The waters of the harbour were calm and the weather was fine and clear with light airs and a temperature of 4.5°C.

At about 2320, December 15, when approximately 12,000 tonnes of cargo had been loaded into the vessel, the piston rod broke in the self-unloading boom luffing mechanism and the boom fell to the deck. The boom landed on the coaming of No. 16 hatch opening, struck the edge of the deck and, due to its momentum, the boom buckled downwards over the ship's side and into the water. It was readily observed that the fractured piston rod had slipped clear of its cylinder.

Fortunately, no person was injured in the occurrence but loading of the vessel was stopped pending assessment of the damage and removal of the debris. By December 17, the overhanging portion of the boom had been cut loose and placed by a floating crane on a barge for transportation to shore. The cylinder and the piston rod for the raising/lowering mechanism were removed and taken ashore for examination.

During subsequent days, the damage on deck was repaired, a replacement cylinder, piston and rod were installed, and the

remaining portion of the boom was modified to provide a suitable working arrangement. After completion of repairs and loading the vessel departed Vancouver on January 10, 1990.

Examination of the broken piston rod was carried out in the laboratory of a Vancouver consulting engineering company, where it was determined that hydrogen embrittlement had caused the failure of the piston rod.

A replacement boom was installed aboard the "ATLANTIC ERIE" in June 1990, and it has been estimated that costs for physical damage to the vessel, repairs and replacements, will be approximately $2,500,000.

Findings

On December 15, 1989, while the bulk carrier "ATLANTIC ERIE" was being loaded alongside at Vancouver Wharves, Vancouver Harbour, British Columbia, the self-unloading boom, which was not in use at that time and had been raised and slewed over the seaward side of the vessel, collapsed due to fracturing of the piston rod of the hydraulically operated raising/lowering mechanism. It would appear that the following factors contributed to the occurrence:

- the tubular stainless steel piston rod broke at a sectional weld due to degradation of the metal by hydrogen embrittlement, and

- the hydrogen embrittlement was initiated either during the manufacturing processes in 1984 or during the replacement of the exterior chromium plating in 1988, less likely was environmental electrochemical corrosion.

Other Findings

There is no regulatory or other requirement for such self-unloading equipment to be approved or periodically inspected by the Coast Guard, if a Canadian ship, or by the Classification Society.

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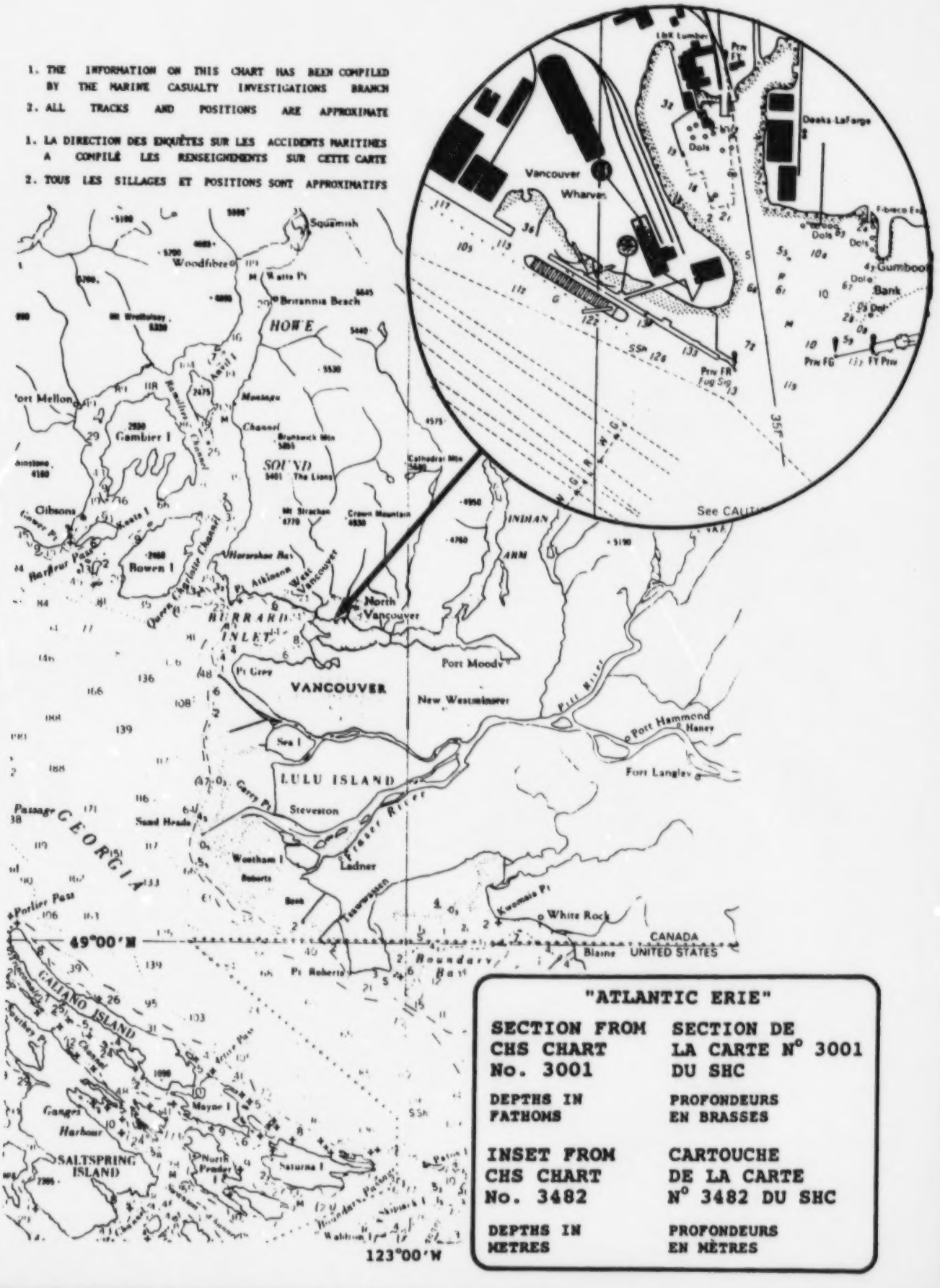


"ATLANTIC ERIE"

SECTION FROM CHS CHART No. 3001	SECTION DE LA CARTE N° 3001 DU SHC
DEPTHS IN FATHOMS	PROFONDEURS EN BRASSES
INSET FROM CHS CHART No. 3482	CARTOUCHE DE LA CARTE N° 3482 DU SHC
DEPTHS IN METRES	PROFONDEURS EN MÈTRES

"UNI-SUPERB"

Two views of vessel alongside terminal.
Vues du navire amarré au terminal

"UNI-SUPERB"

Grounding in Vancouver harbour, B.C., August 12, 1989.

Summary

The 14,153 gross ton "UNI-SUPERB" is a Taiwanese-registered container vessel of 882 TEU capacity which operates on the transpacific service. She has a typical container ship configuration with two of her nine cargo bays abaft the accommodation.

On the afternoon of August 12, 1989, the "UNI-SUPERB" was entering Vancouver harbour, B.C., on a regularly scheduled call under the conduct of a local pilot. She had sailed from Seattle, Washington, that morning, drawing 8.78 m forward and 9.38 m aft and she was carrying some 4,500 t of water ballast together with the 8,300 t of cargo in 724 TEU's. The weather was fine and clear with a light wind and slight sea and as the "UNI-SUPERB" approached Lions Gate bridge the chief officer and a number of the crew were sent forward and the second officer and other crew members were sent aft to prepare for mooring. The tide was flooding with the current estimated at one to one and a half knots.

As the vessel reached Lions Gate bridge, the rudder angle was increased to 20° to starboard to augment the vessel's rate of swing but as he responded to the subsequent order to 'ease the helm' the quartermaster felt the wheel resist his efforts and saw that the rudder had stopped at 15°. After the third officer had tried unsuccessfully to restore control of the steering in the wheel-house, the crew alerted the pilot to the steering failure. With the vessel continuing to swing to starboard out of the channel, the main engine was immediately put to stop and then full astern and the port anchor was let go followed quickly by the starboard anchor, both anchor brakes yielding cable under extreme tension.

Meanwhile the third officer was ordered by the master to advise the engine-room of the steering failure and to order the second officer on the poop to the steering flat to engage the emergency steering. With the arrival of the first engineer to join the second officer in the steering flat, the emergency steering was engaged but, at that point, the impact of the vessel grounding was felt. The time was 1501 and the forward half-length of the "UNI-SUPERB" grounded on the rocky shoreline off Stanley Park. The pilot reported the grounding to Vancouver VTS and tugs were summoned.

High water at Vancouver was predicted for 1705 but at 1619, having transferred some ballast and with the assistance of six tugs, the "UNI-SUPERB" slid back off into deep water. The steering gear was now found to be functioning normally having been tested by the first engineer who continued to monitor the system until the

vessel docked.

The "UNI-SUPERB" had suffered extensive bottom damage, including two double-bottom tanks but as both were used for ballast water there was consequently no pollution. No injuries were sustained during the grounding. The "UNI-SUPERB" discharged all her cargo in Vancouver and the vessel dry-docked locally for temporary repairs to satisfy Ship Safety Branch of Canadian Coast Guard and Classification Society seaworthiness requirements. The vessel sailed light for Japan on August 23 where full repairs were to be effected. The approximate cost of repairs effected in Vancouver was $280,000.

Findings

While transiting First Narrows within the limits of Vancouver Harbour in clear visibility, under the conduct of a Canadian pilot, the Taiwanese container vessel "UNI-SUPERB" grounded on the shore of Stanley Park between Lions Gate Bridge and Brockton Point on August 12, 1989 due to failure of the steering gear.

Although a precise explanation for the failure of the steering gear cannot be asserted with confidence, in all probability a component or part of the system failed at a critical time when the vessel was in severely restricted waters.

Whatever the nature of the failure, it appeared to have corrected itself during the time the system was in the manual emergency steering mode.

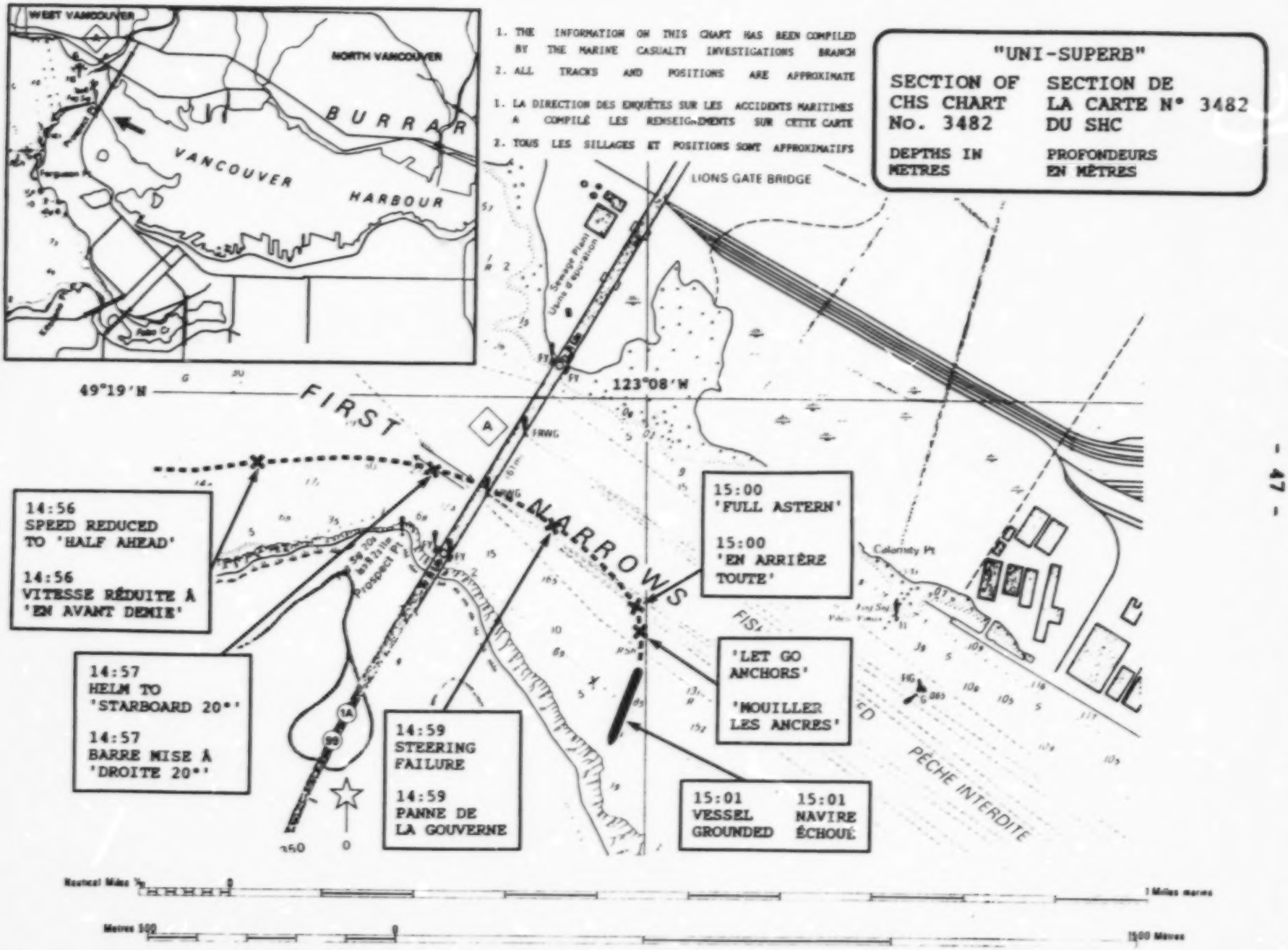
There is conflicting testimony regarding what action was taken by the OOW, but it is considered that prompt action by switching control systems may have re-established steering control.

Insufficient time existed for the manually operated emergency steering gear to be engaged and activated before the vessel went aground.

Other Findings

The possibility of major pollution was averted due to the fuel oil tanks being situated above the level of the double bottom tanks.

The steering system block diagram provided by the vessel is inaccurate, in that No. 2 control system amplifier is shown connected through the control system selection switch directly to No. 2 control pump rather than to No. 2 control solenoid valve.


WEST VANCOUVER
NORTH VANCOUVER
BURRARD
VANCOUVER HARBOUR
1. THE INFORMATION ON THIS CHART HAS BEEN COMPILED BY THE MARINE CASUALTY INVESTIGATIONS BRANCH
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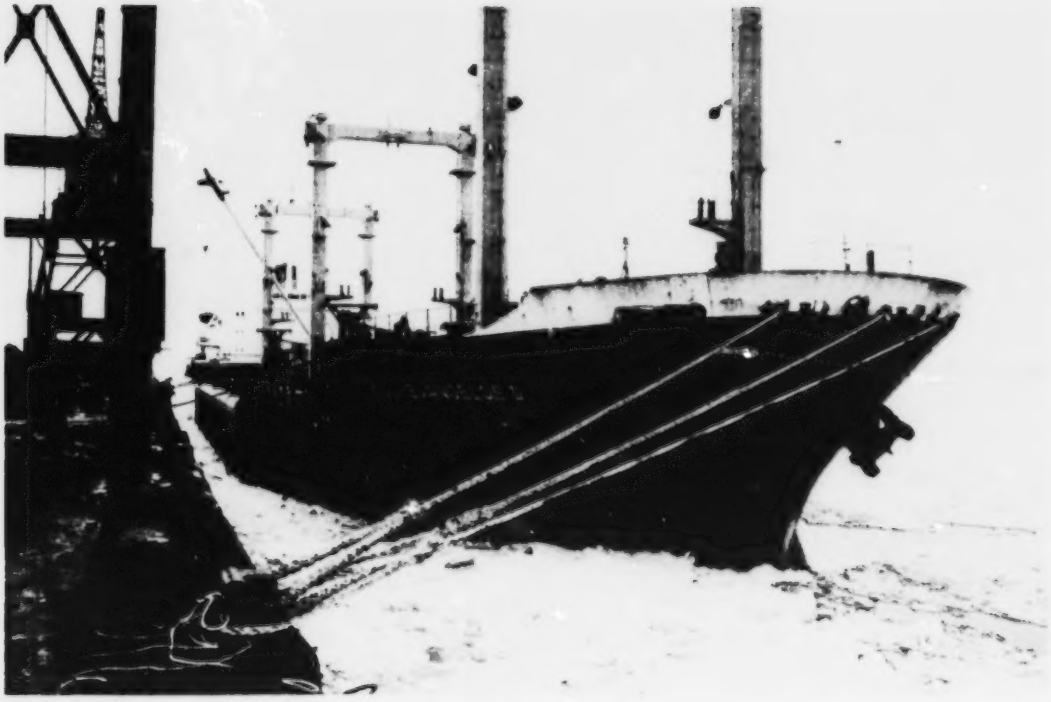
2. TOUS LES SILLAGES ET POSITIONS SONT APPROXIMATIFS
"UNI-SUPERB"
SECTION OF CHS CHART No. 3482
SECTION DE LA CARTE N° 3482 DU SHC
DEPTHS IN METRES
PROFONDEURS EN MÈTRES
LIONS GATE BRIDGE
49°19'N
123°08'W
FIRST NARROWS
14:56
SPEED REDUCED TO 'HALF AHEAD'
14:56
VITESSE RÉDUITE À 'EN AVANT DEMIE'
14:57
HELM TO 'STARBOARD 20°'
14:57
BARRE MISE À 'DROITE 20°'
14:59
STEERING FAILURE
14:59
PANNE DE LA GOUVERNE
15:00
'FULL ASTERN'
15:00
'EN ARRIÈRE TOUTE'
'LET GO ANCHORS'
'MOUILLER LES ANCRES'
15:01 VESSEL GROUNDED
15:01 NAVIRE ÉCHOUÉ
PÊCHE INTERDITE
Prospect Pt
Calamity Pt
Nautical Miles
Miles marins
Metres 500
500 Mètres

"LENDOUDIS EVANGELOS II"

Vessel aground. Navire échoué.



Secured alongside. Amarré à quai.

"LENDOUDIS EVANGELOS II"

Grounding in St. Lawrence river, March 7, 1990.

Summary

The "LENDOUDIS EVANGELOS II" is a Cypriot-registered, geared bulk carrier of 18,700 gross tons with her machinery space, navigating bridge and accommodation all located aft.

On March 7, 1990, the "LANDOUDIS EVANGELOS II" was downbound in the St. Lawrence river from Montreal to Quebec City. She was partly loaded with a cargo of grain and the loading of further grain was to be completed in the port of Quebec.

At about 1230 the vessel was abeam of Saint-Nicholas and she altered on to a course to take her under the Quebec bridges. The engine telegraph was on "half ahead" and with the ebb tide the vessel's speed over the ground was approximately 10 knots. As the vessel settled on a heading of 065°(T), the generators and main engine stopped suddenly without any warning. Without electrical power for the steering gear which was locked with the helm 5° over to port, the "LENDOUDIS EVANGELOS II" continued to move ahead under her own momentum, swinging towards the north shore of the river.

While the pilot on duty used an emergency-battery-powered radiotelephone to advise VTS of the situation, the OOW hurried forward, and with the assistance of a seaman, attempted to let go an anchor to stop the vessel. They finally managed to let go the port anchor with three shackles of cable but this was too late to stop the vessel running aground and also increased the swing to port so that at 1736 the "LENDOUDIS EVANGELOS II" struck the bottom.

The vessel was firmly aground on the north shore of the river less than 3/4 of a mile downstream of Pointe Deschambault, 2.8 miles above the old Quebec Bridge. After several unsuccessful attempts, the "LENDOUDIS EVANGELOS II" was finally refloated two days later, in the early evening of March 9.

The damage to the vessel's bottom plating was considerable and after spending more than two months at Quebec, she went into drydock in Halifax, Nova Scotia at the end of May with repairs taking a further three months to complete. The cost of these repairs was some $2,000,000.

Findings

Late in the afternoon on March 7, 1990 the Cypriot bulk carrier "LENDOUDIS EVANGELOS II" suffered a general power failure less than three miles upstream of the Quebec bridges while she was downbound in the St Lawrence River. The vessel, without propulsion or means of steering, then continued to move ahead under her own momentum until she ran aground on the north shore of the river. It appears that:

- a member of the crew either intentionally or accidentally moved the control lever of the fuel tank's emergency shutoff system;
- this action led to the closing of the quick-closing valve on the generator day tank;
- the resulting fuel cut-off occurred suddenly and without warning, stopping the generators, after which all the machinery stopped for lack of electrical power; and
- in view of the nature of the failure, it was impossible to restart the machinery in time to avoid grounding.

Other Findings

It should not be inferred that sabotage was necessarily attempted.

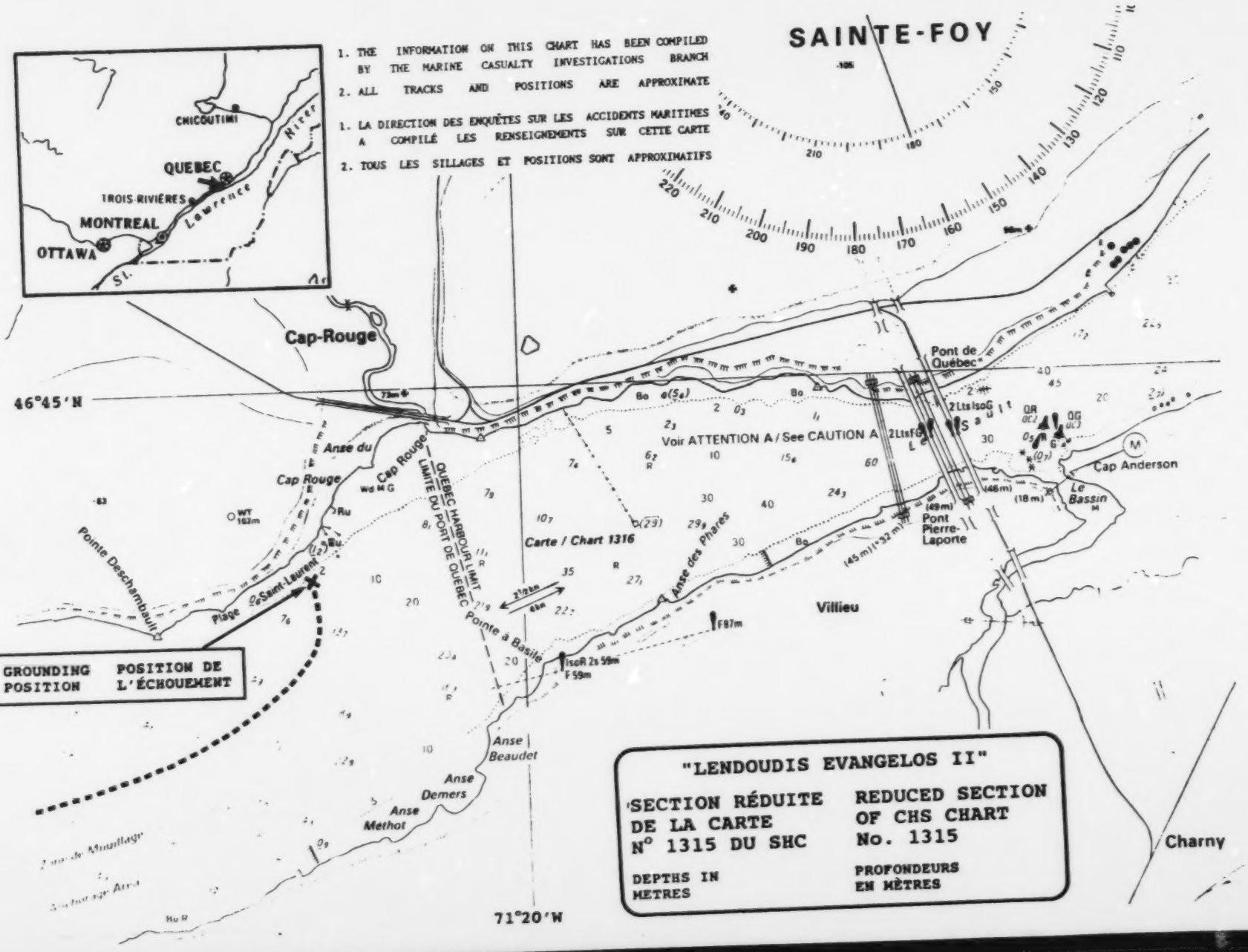
The control lever for the quick-closing valves was not adequately protected from being activated.

As there is no alarm indicating closure of the emergency shutoff valves, and no other alarm sounded before fuel was cut off, the personnel in the engine room were not able to prevent the power failure.

The vessel's emergency power source was not designed to operate the steering gear.

No person was standing-by on the fo'c'sle head and it was not possible to drop the anchors in time to stop the vessel because of the short time between the power failure and the grounding.

The power failure caused the intercom system, including to the fo'c'sle head, to be inoperative.


1. THE INFORMATION ON THIS CHART HAS BEEN COMPILED BY THE MARINE CASUALTY INVESTIGATIONS BRANCH
2. ALL TRACKS AND POSITIONS ARE APPROXIMATE
1. LA DIRECTION DES ENQUÊTES SUR LES ACCIDENTS MARITIMES A COMPILÉ LES RENSEIGNEMENTS SUR CETTE CARTE
2. TOUS LES SILLAGES ET POSITIONS SONT APPROXIMATIFS
CHICOUTIMI
QUEBEC
TROIS-RIVIÈRES
MONTREAL
OTTAWA
St. Lawrence River
SAINTE-FOY
Cap-Rouge
Pont de Québec
46°45'N
Anse du Cap Rouge
Cap Rouge
QUEBEC HARBOUR LIMIT
LIMITE DU PORT DE QUÉBEC
Voir ATTENTION A / See CAUTION A
2 Lts Iso G
2 Lts F G
Cap Anderson
Le Bassin
Pont Pierre-Laporte
Carte / Chart 1316
Anse des Phares
Villieu
Pointe Deschambault
Pointe à Basile
Pointe-à-Saint-Laurent
Plage
GROUNDING POSITION
POSITION DE L'ÉCHOUEMENT
Anse Beaudet
Anse Demers
Anse Methot
Charny
71°20'W
"LENDOUDIS EVANGELOS II"
SECTION RÉDUITE DE LA CARTE N° 1315 DU SHC
REDUCED SECTION OF CHS CHART No. 1315
DEPTHS IN METRES
PROFONDEURS EN MÈTRES

Tug "MARS". Le remorqueur "MARS".

Barge "500-4" aground. Le chaland "500-4" échoué.

"MARS"/"500-4"

Grounding of barge after tow-line parted, Milbanke Sound, B.C., February 5, 1990.

Summary

The "MARS" is a typical ocean-going tug of 194 gross tons, built in 1970, registered in San Francisco, California, and employed primarily in coastal towing on the Pacific west coast and to Alaska. The "500-4" is a double-decked RoRo freight barge of 7,171 gross tons, also registered in San Francisco. The lower deck of the "500-4" is fitted with rail lines to accommodate rail cars and the barge is employed in the operator's service between Seattle, Wa., and Port Whittier, Alaska.

On the morning of February 5, 1990, the "MARS" was towing the "500-4" and another US-registered barge, the "ATKA", in a tandem tow with a line to each barge, northbound en route to Port Whittier. At 1030, the tow rounded Robb Point, where the main Inner Passage enters Milbanke Sound from Seaforth Channel, and, in these open waters, the effect of the SSE wind at 30-35 knots was felt by the vessels. The visibility was 3 miles in rain, snow and hail as the tug paid out on the tow-lines to counter the worsening sea conditions, and speed was reduced to lessen the strain on the towing gear. Shortly after this, at about 1115, the master of the "MARS" concluded from the movement of the tug, that one of the tow-lines had touched bottom. He immediately increased the power to the main engine to pick the wire off the bottom but it soon became evident that the starboard tow-line had parted and the barge "500-4" was adrift.

In the prevailing weather conditions, and hampered by the "ATKA", the "MARS" was unable to recover the "500-4" which grounded, about one hour later, in the shoal waters to the SE of Lady Douglas Island. The master notified VTS and his owners, and various agencies of the Canadian Coast Guard were contacted to deal with the grounding.

The edition of CHS chart No. 3728 being used on board the "MARS" was out-of-date and did not show the 13 fathom shoal patch on which the tow-line snagged.

The salvage operation refloated the "500-4" on February 11 and she was taken to a sheltered bay inside Seaforth Channel where, in view of her extensive bottom damage and the hazardous cargo on board, it was decided to off-load her where she lay. Unloading was completed on February 26 and the "500-4" was then towed to Victoria, B.C., where she was dry docked on March 1. After an extensive damage survey, with her insured value of $3.5 million, she was declared a constructive total loss and towed to Seattle, Washington.

Findings

On February 5, 1990 the northbound, unmanned, loaded, American freight barge "500-4", one of two barges being towed in tandem, each on an independent tow wire, by the American tug "MARS" parted her tow line and subsequently grounded close inshore about four cables northwest of Cross Point, Lady Douglas Island in Milbanke Sound, B.C. Gale/near gale wind and sea conditions were being experienced at the time.

It would appear that the following factors contributed to the grounding:

- the speed of the tow was reduced to allow for the adverse weather conditions resulting in the wire snagging on a 13 fathom shoal patch causing it to break;

- the master was unaware of the 13 fathom shoal patch because the nautical chart in use was outdated and did not show the shoal, and

- with the tow wire broken, the barge, with a high freeboard, was swept ashore by the prevailing wind, sea and swell.

Other Findings

The tug "MARS" was unable to prevent the barge "500-4" from grounding after the tow wire broke as she had limited manoeuvrability in the adverse weather conditions while towing the barge "ATKA".

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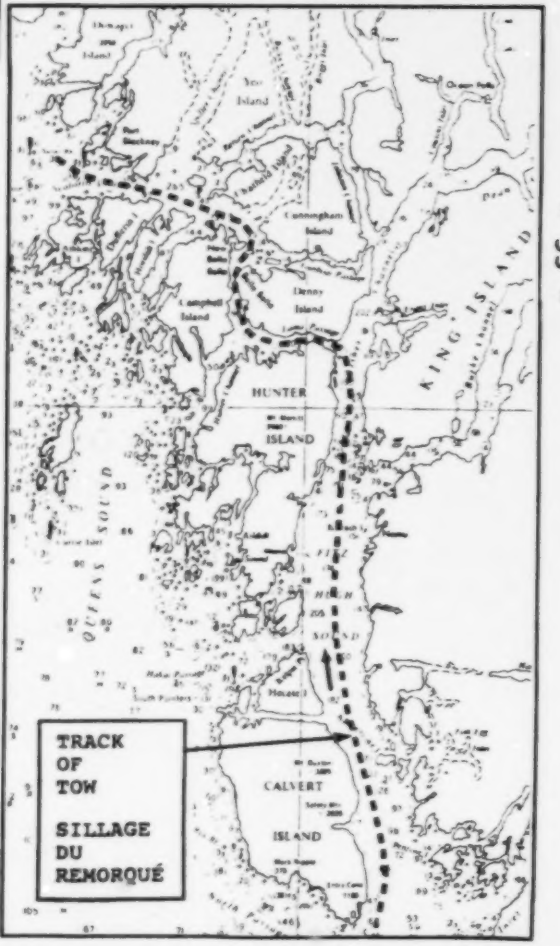
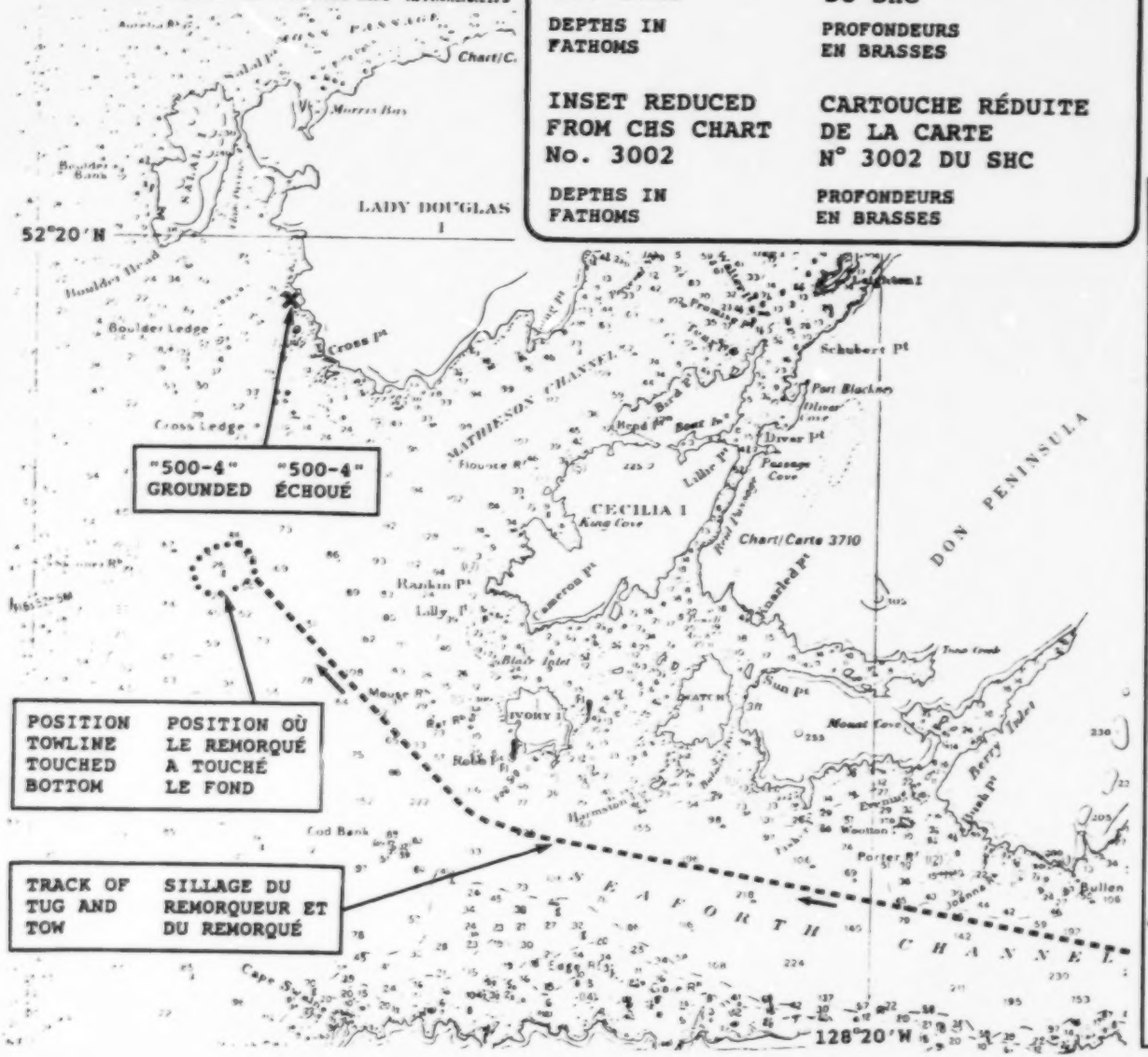
"MARS"/"500-4"

REDUCED SECTION OF CHS CHART No. 3728	SECTION RÉDUITE DE LA CARTE N° 3728 DU SHC
DEPTHS IN FATHOMS	PROFONDEURS EN BRASSES
INSET REDUCED FROM CHS CHART No. 3002	CARTOUCHE RÉDUITE DE LA CARTE N° 3002 DU SHC
DEPTHS IN FATHOMS	PROFONDEURS EN BRASSES





"500-4" "500-4"
GROUNDED ÉCHOUÉ

POSITION TOWLINE TOUCHED BOTTOM — POSITION OÙ LE REMORQUÉ A TOUCHÉ LE FOND

TRACK OF TUG AND TOW — SILLAGE DU REMORQUEUR ET DU REMORQUÉ

TRACK OF TOW — SILLAGE DU REMORQUÉ

"MANIC"

"ROBERT KOCH"

"ROBERT KOCH"

Grounding in Lac Saint-Pierre, Quebec
October 17, 1989

Summary

The "ROBERT KOCH", formerly a general cargo vessel of 1,538 gross tons, built in 1957, was an unmanned rudderless hulk ballasted with rock at the time of this casualty in October, 1989. The owners intended to convert the "ROBERT KOCH" into a barge for carrying cargo on inland waterways and to this end the vessel was to be towed from Contrecoeur down the St. Lawrence river to Saint-François-Xavier-de-la-Petite-Rivière. The tow was to be undertaken by the 60 gross ton river tug "MANIC", built in 1932, and propelled by a bridge-controllable diesel main engine developing 440 BHP.

At about 2325, October 16, 1989, as the tow got underway, it was a clear night with the wind out of the north at 12-18 knots, the visibility was over 5 miles and the sea was calm. The mate took over the conduct of the vessel at midnight being on watch, with a man at the wheel, until 0600. The route is well marked with lights, leading lights and lit buoys and from time to time the mate plotted the position on the chart as the tow proceeded down river, with the current astern, at an average speed of 4.5 knots.

At about 0330, the tow was off the Ilets Percés in Lac Saint-Pierre when a wind squall came up suddenly and the sea became rough. The tow continued in the squall more or less in mid channel, there being no other traffic in the area at this time, but as the tow passed buoy S103 a set towards the north side of the channel was experienced. As the tug pulled the "ROBERT KOCH" back towards the centre of the channel, the "ROBERT KOCH" began to sheer and veered out of the channel grounding on the south bank midway between buoys S101 and S103. The time was 0400, October 17, 1989.

Not having a towing winch the "MANIC" could not shorten the towline to facilitate manoeuvring when the "ROBERT KOCH" began to veer out of the channel in the wind squall with the current behind her. When the "ROBERT KOCH" grounded she pulled the "MANIC" with her, as the tug could not let go the towline which was bar tight. The "MANIC" is not fitted with a towing hook and to release the tow it would have been necessary to cut the line with a fire axe.

The towline was eventually cut to allow the tug to disengage from the grounded vessel after which the "MANIC" secured at the stern of the "ROBERT KOCH" to attempt to refloat her. However, it was not until about 2145 that night that the grounded vessel was freed by the tug "ROBERT H" which had come to the scene from Trois-Rivières. The "ROBERT H" is a tug of 257 gross tons developing 1,000 BHP and, with the assistance of the "MANIC", she also towed the "ROBERT KOCH" to Trois-Rivières, where they arrived at 0300, October 18. There was no apparent damage to either vessel and no injury or pollution as a result of this grounding.

Findings

While being towed by the tug "MANIC", the hulk "ROBERT KOCH" grounded, in good visibility, on the south side of the shipping channel, midway between buoys S101 and S103, at about 0400, October 17, 1989.

It would appear that the following factors contributed to the grounding:

- a wind squall came up suddenly and the sea became rough;
- there was a strong current from astern, estimated at about 2 knots;
- the tug was not fitted with a towing winch and thus could not adjust the length of the towline; and
- the tug probably did not have sufficient power to maintain control over the tow in adverse conditions.

Other Findings

It was fortunate that there was no other traffic in the vicinity at the time of the casualty.

Findings

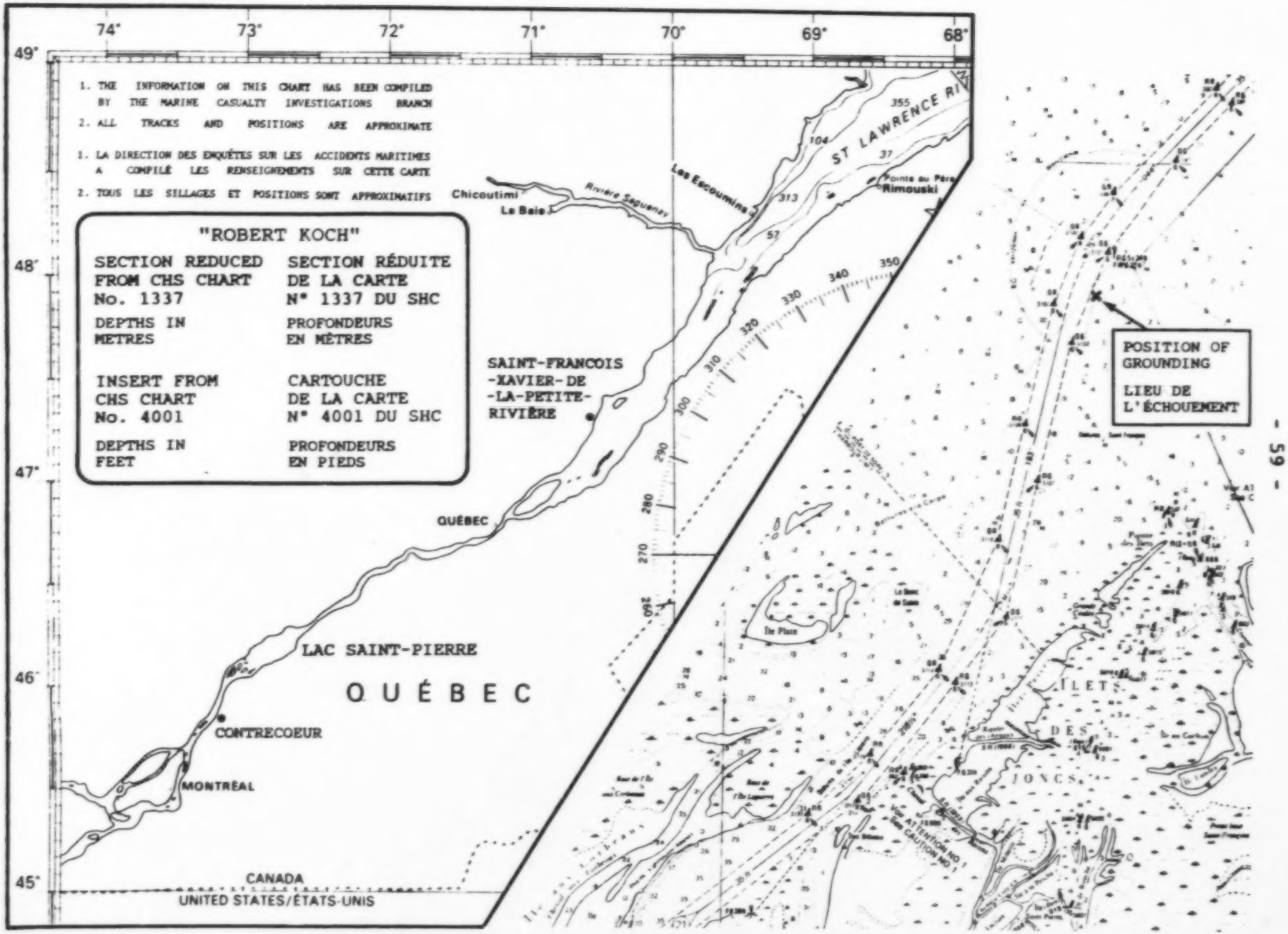
The "ROBERT KOCH", a 'dead' ship being towed by the tug "MANIC" grounded, in good visibility, on the south side of the navigation channel in Lac Saint-Pierre, midway between buoys S101 and S103, at about 0400 on October 17, 1989.

It would appear that the following factors contributed to the grounding:

- a wind squall came up suddenly and the sea became rough;
- a strong current from astern estimated at about 2 knots;
- the tug was not fitted with a towing winch and thus could not adjust the length of the tow line, and
- the tug probably did not have sufficient power to maintain control over the tow in adverse conditions.

Other Findings

Fortunately, there was no other traffic in the vicinity at the time of the casualty.


1. THE INFORMATION ON THIS CHART HAS BEEN COMPILED BY THE MARINE CASUALTY INVESTIGATIONS BRANCH
2. ALL TRACKS AND POSITIONS ARE APPROXIMATE
1. LA DIRECTION DES ENQUÊTES SUR LES ACCIDENTS MARITIMES A COMPILÉ LES RENSEIGNEMENTS SUR CETTE CARTE
2. TOUS LES SILLAGES ET POSITIONS SONT APPROXIMATIFS
"ROBERT KOCH"
SECTION REDUCED FROM CHS CHART No. 1337
SECTION RÉDUITE DE LA CARTE N° 1337 DU SHC
DEPTHS IN METRES
PROFONDEURS EN MÈTRES
INSERT FROM CHS CHART No. 4001
CARTOUCHE DE LA CARTE N° 4001 DU SHC
DEPTHS IN FEET
PROFONDEURS EN PIEDS
POSITION OF GROUNDING
LIEU DE L'ÉCHOUEMENT
74°
73°
72°
71°
70°
69°
68°
49°
48°
47°
46°
45°
ST LAWRENCE RI
Chicoutimi
La Baie
Rivière Saguenay
Les Escoumins
Pointe au Père
Rimouski
SAINT-FRANCOIS -XAVIER-DE -LA-PETITE-RIVIÈRE
QUÉBEC
LAC SAINT-PIERRE
QUÉBEC
CONTRECOEUR
MONTRÉAL
CANADA
UNITED STATES/ÉTATS-UNIS
ILETS
DES
JONCS
Ile Plate
355
104
37
313
57
350
340
330
320
310
300
290
280
270
260

"JOSEPH AND CLARA SMALLWOOD"

View inside wheel-house. Vue intérieur de la timonerie.

Showing damage to starboard side of bulbous bow.
Vue des dommages au bulbe d'étrave à tribord.

"JOSEPH AND CLARA SMALLWOOD"

Bottom contact, Port aux Basques, Newfoundland, January 27, 1990.

Summary

The "JOSEPH AND CLARA SMALLWOOD" is a 27,229 gross ton vehicle and passenger ferry which, as a new vessel, came into service on the run between North Sydney, N.S., and Port aux Basques, Nfld, in early January, 1990. This RoRo ferry has bow and stern doors for loading, and propulsion is by two controllable pitch propellers. She is also fitted with two bow and two stern thrusters for increased manoeuvrability.

On January 27, 1990, as the vessel neared to the entrance to Port aux Basques harbour at about 1720, the master, who had the conduct of the vessel, decided to abort the approach because of the heavy snow squalls experienced at the time. About ten minutes later the wind, which was out of the WNW, had dropped to about 35-45 knots and the master decided to make another attempt to enter the harbour and berth the vessel. The master advised the engine-room to be prepared to provide full power on the four main engines and the pitch and thrusters were tested before the "JOSEPH AND CLARA SMALLWOOD" proceeded in through the breakwater, favouring the west side of the channel to offset the strong westerly wind.

With crew manning the forward and after docking stations the vessel began to swing off her berth preparatory to docking 'stern in'. Using her main engines and thrusters, the "JOSEPH AND CLARA SMALLWOOD" was swinging to starboard and was across the wind on a NE'ly heading when she was struck by a sudden heavy squall from the WNW. The squall set the vessel bodily to the SE until her fore part grounded on the west side of Vardys Island. With the forward end thus restrained, the wind acting on the vessel's port beam swung the stern round until she was once again headed inbound and towards her berth. With the vessel now under control, the master proceed to berth her, bow-in at the ferry terminal at 1815.

The high winds and the critical clearance between the bow visor and the shore ramp made it impossible to discharge traffic with the vessel berthed 'bow-in' and accordingly the master turned the "JOSEPH AND CLARA SMALLWOOD" around at 0115 that night to allow the traffic to be taken off at that time.

After the grounding an ingress of water into a forward void space was discovered. This was through a fracture in the shell plating but ship's pumps were able to control the level of water until temporary repairs could be effected. The vessel sailed on January 29 for Halifax where permanent repairs, estimated to cost $650,000, were carried out. There were no injuries or pollution as a result of the casualty.

Findings

While manoeuvring off Marine Atlantic Ferry Terminal to dock in Port-aux-Basques on January 27, 1990, under the conduct of the master and during heavy squalls, the "JOSEPH AND CLARA SMALLWOOD" struck the west end of Vardys Island as a result of an error in judgement. It would appear that the following factors contributed to the casualty:

- the weather conditions were gale force with high gusting westerly winds;
- the harbour is confined and leaves very little room for error while manoeuvring such a large vessel, and
- the responsibility to enter the harbour under various conditions is considered the sole responsibility of the master.

Other Findings

The vessel did not report the casualty immediately to Port-aux-Basques VTS.

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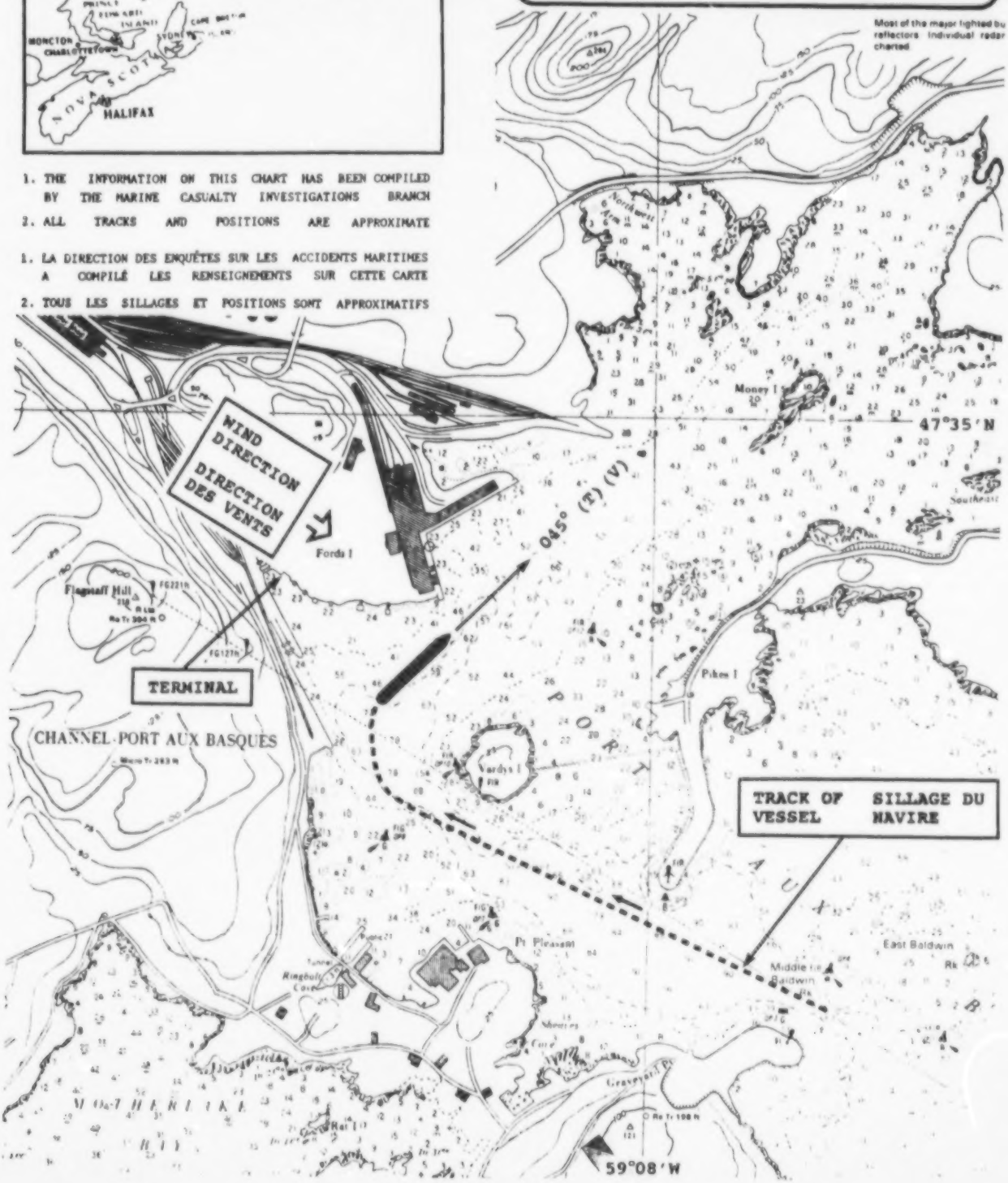
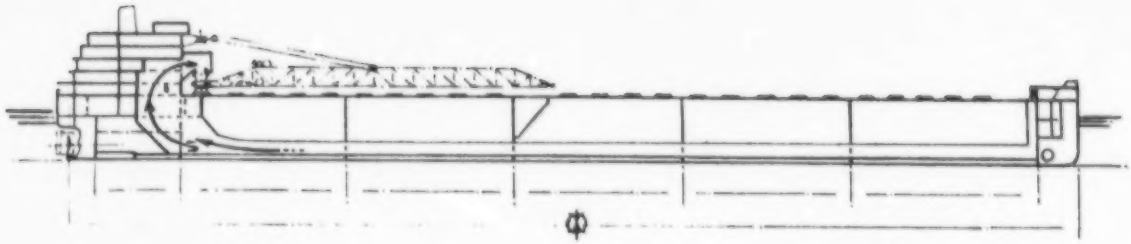
"JOSEPH AND CLARA SMALLWOOD"

REDUCED SECTION OF CHS CHART No. 4641	SECTION RÉDUITE DE LA CARTE N° 4641 DU SHC
DEPTHS IN FEET	PROFONDEURS EN PIEDS



"ALGOBAY"



Typical profile of self-discharging vessel of Seaway maximum dimensions.

Coupe longitudinale d'un navire auto-déchargeur de dimensions maximales pour la voie maritime.

View of wheel-house showing starboard radar (ARPA).

Vue de la timonerie montrant le radar de tribord (APPA).

"ALGOBAY"

Bottom contact near Rapides Richelieu, St. Lawrence river, November 25, 1989.

Summary

The "ALGOBAY" is a typical modern self-unloader of maximum Seaway dimensions. Her engine-room and accommodation are located aft and she has combined bottom, side and topside tanks outboard of her five cargo holds. She was built in 1978 and is registered in Sault Ste. Marie.

On November 25, 1989, the "ALGOBAY" was upbound in the St. Lawrence river to Montreal, Que. with a cargo of gypsum from Dartmouth, Nova Scotia from where she had sailed with a salt water draught of 9.40 m. Shortly after 1600, the wind was reportedly light and the visibility was reduced to between 2 and 4 miles in light snow as the vessel altered course round Pointe au Platon on to the stretch of the river which would take her through the Rapides Richelieu. The "ALGOBAY" was being navigated by visual observation and by radar and steered on the Lotbinière ranges as she traversed the rapids in the fading light. As she was being brought round on to the next course which would put the Pointe au Platon ranges astern the vessel was found to be not swinging quickly enough and the wheel was put hard over to starboard. However, at about 1630, the "ALGOBAY" was felt to contact the bottom at the south side of the ship channel before she could be brought back to the centre of the channel.

In this vicinity the channel is cut into the rocky bottom of the Boulard bar and in February 1989 a Notice to Shipping had been promulgated advising that a shoal had been located in the area and that it extended some 9 m into the channel and had a water depth over it of 7 m at chart datum; the height of the tide at the time of the casualty was 2.38 m above chart datum.

All the ballast tanks were sounded and there was no indication of any leak, however, a second set of soundings taken later, when the "ALGOBAY" was seen to be listing to port, revealed that she was taking water in No. 5 port side tank. The Montreal VTS Centre was promptly advised of the incident and the ship's pumps were able to contain the ingress of water.

On November 26, the "ALGOBAY" docked in Montreal where she partially unloaded before completing discharge at the Côte Ste Catherine wharf in the Seaway later the same day.

An underwater inspection revealed buckling and fractures in the ship side plating in way of the turn of the bilge at No. 5 port side tank. Temporary repairs were carried out which consisted of fitting a doubling plate and constructing a cement box to stop the

leaks. The cost of permanent repairs including dry-docking was estimated at $125,000. There were no injuries or pollution as a result of the casualty.

Findings

On November 25, 1989 the self-unloader "ALGOBAY" struck the south bank of the channel abreast of Boulard bar in the St. Lawrence river, in daylight, while under the conduct of a pilot as a result of an error in navigation. It would appear that the following factors contributed to the casualty:

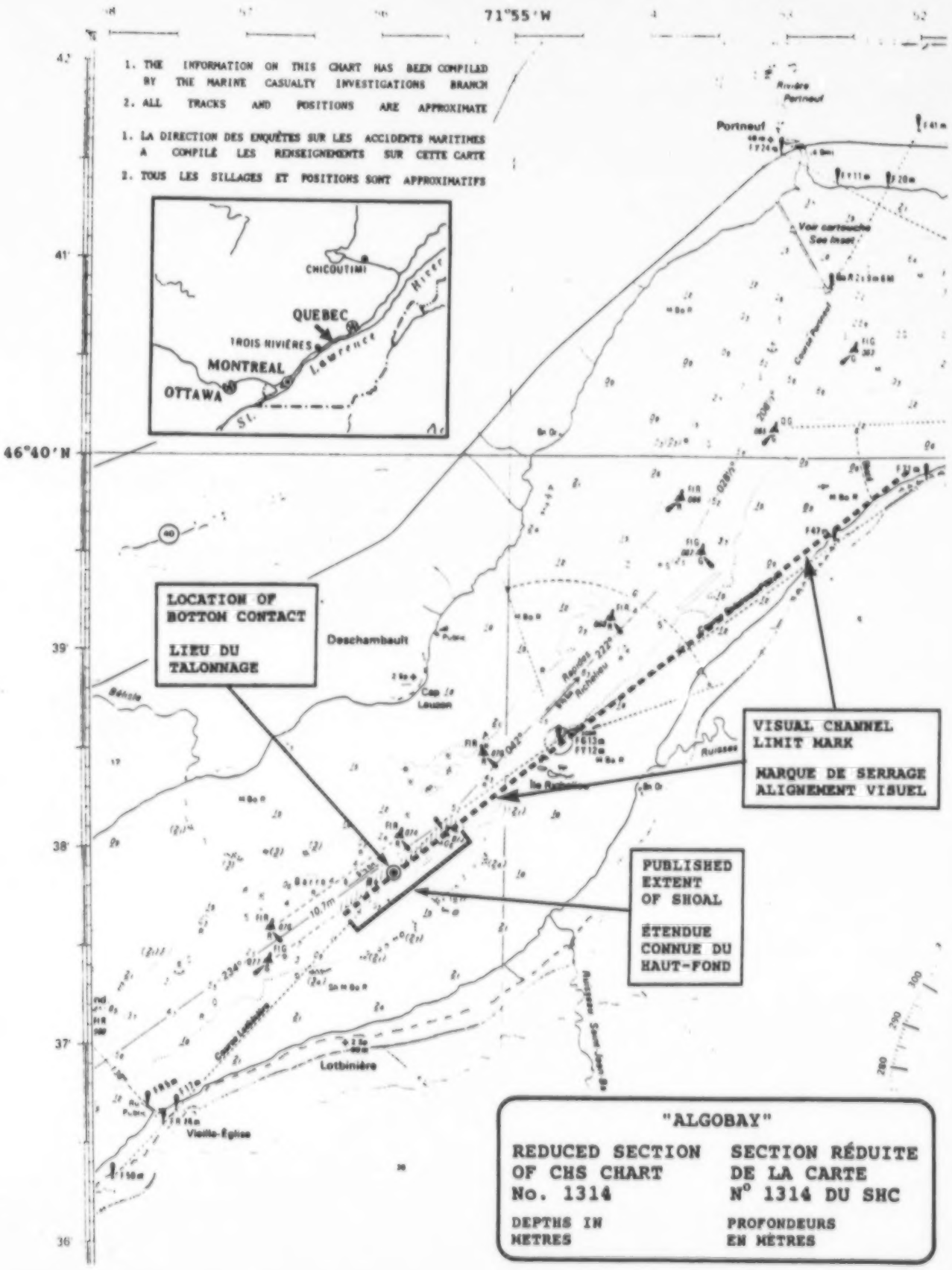
- an intermediate course was not steered before altering onto the Pointe au Platon ranges course;
- the alteration of course was begun too late and with the vessel too far into the bend in the channel;
- the collapse of the rock face along the southern edge of the channel upstream of buoy Q73 had produced a shoal;
- the line of the channel limit mark which was used passes over this shoal;
- the presence of the shoal prevented the vessel from using the full breadth of the channel.

Other Findings

A warning of the presence of the shoal upstream of buoy Q73 was published in a February 1989 Notice to Shipping.

It was not realized before the bottom contact that the bearing marking the southern edge of the channel upstream of buoy Q73 coincided with the shoal reported in Notice to Shipping to No. L0253/89.

The buoys were liable to move in ice and their usefulness as aids to navigation was therefore limited. On November 29, 1989, some buoys in the vicinity of the Richelieu rapids were observed to have been moved to the NE.


71°55'W
46°40'N
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CHICOUTIMI
QUEBEC
TROIS RIVIÈRES
MONTREAL
OTTAWA
St. Lawrence River
LOCATION OF BOTTOM CONTACT
LIEU DU TALONNAGE
VISUAL CHANNEL LIMIT MARK
MARQUE DE SERRAGE ALIGNEMENT VISUEL
PUBLISHED EXTENT OF SHOAL
ÉTENDUE CONNUE DU HAUT-FOND
Deschambault
Portneuf
Lotbinière
Vieille-Église
"ALGOBAY"
REDUCED SECTION OF CHS CHART No. 1314
SECTION RÉDUITE DE LA CARTE N° 1314 DU SHC
DEPTHS IN METRES
PROFONDEURS EN MÈTRES

Glossary

(Ship) arrester	Wire-rope tackle positioned across lock (in Seaway) to protect lock gates.
Beset	Situation of a vessel surrounded by ice and unable to move.
'Blind' call	Radio (telephone) call to unidentified vessel.
Bulwark	Vertical plating along each side of vessel above weather deck.
CHS	Canadian Hydrographic Service.
Cable	One tenth of a nautical mile (185 m).
Constructive total loss	Casualty whose cost of restoration would exceed market value when repaired.
(Chart) datum	Plane of reference for soundings on a chart.
Downflooding	Ingress of water to interior of hull by way of openings as they become submerged.
'Emergency' stop	Using full astern power of main engine(s) to bring vessel to a halt.
Freeboard	Height of vessel's side amidships above water.
'Green-to-green'	Starboard side towards starboard side.
'Heavy' oil	(Cheaper) less refined fuel oil.
Luffing	Raising and lowering.
OBO	Vessel designed to carry alternate ore, bulk and oil cargoes.
OOW	Officer of the watch
(Fishing) opening	Period of time when fishing is permitted in a specific area.
Packer	Vessel used to collect and transport fish.

Pitch	Distance propeller would advance in one revolution in unyielding medium.
RoRo	Roll-on, roll-off
Seaway	St. Lawrence Seaway.
Self-unloader	Vessel equipped to discharge own (dry bulk) cargo usually by conveyor belts and boom.
Shackle	Length of chain cable of 15 fathoms (90 ft, 27.4 m).
Steering flat	Compartment in afterpart of vessel above rudder in which is located steering engine, quadrant, etc.
Thruster	Athwartship thrust propeller located towards end of vessel.
Transverse stability	Measure of vessel's ability to resist heeling influences.
VHF	Very high frequency (radio)
VTS	Vessel traffic services.
'Wrong-way' alarm	Alarm to indicate propeller rotation direction opposite to that ordered.